Aging with Limited Health Resources

Proceedings of a Colloquium on Health Care
May 1986

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A collection of papers presented at a colloquium sponsored by the Economic Council of Canada. Although this volume is published under the auspices of the Council, the views expressed herein are those of the authors and, as such, have not been endorsed by Members of the Economic Council of Canada.

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Aging with Limited Health Resources

1 Introduction

Judith Maxwell

Two decades ago the Canadian Royal Commission on Health Services recommended that the highest possible health standards for Canadians must become a primary objective of national policy. It recommended that this objective could be achieved through a comprehensive Health Service Program.

Today Canada's population is insured under the Canada Health Act. The program is a success: it has become well established in all provinces, it is very popular with the public and, by international standards, it provides comprehensive care at reasonable cost. It protects our elderly from the burden of rising health care costs, from depletion of their financial resources, and from the threat of chronic sickness without care and death in poverty.

Despite this successful record, there are policy problems to be addressed. Weak economic growth, limited tax revenues, and high deficits, make governments concerned about the continuous growth of health expenditures; health care institutions and health care professions are therefore concerned about underfunding; and the general public is concerned that quality and access to health care services will be at risk. We also know the baby boom of the past will create a wave of old-age pensioners in future. Between now and the turn of the century, Canada's aging population will increase our health care needs.

Over the years the Economic Council of Canada has addressed major health care issues in various publications. Work began with a chapter on health care in the Council's *Seventh Annual Review* in 1970. In later studies the impact of demographic changes, aspects of income redistribution, and provincial cost variations were examined. Issues relevant to the pharmaceutical industry were assessed in a study for the *Regulation Reference*. In a concensus report on *Financing Confederation* the Council recommended greater accountability in publicly financed health care expenditures, it proposed that federal cash transfers should be sensitive to provincial variations in age composition. And in a recently published research study, *Canadian Hospital Costs and Productivity*, the potential for improvement and cost reduction will be examined.

The idea of holding a colloquium on health care was born in late 1984 at a meeting with the Canadian Hospital Association, who requested that the Economic Council turn its attention to various issues related to health care. Council staff organized preliminary meetings with representatives of the Canadian Hospital Association, the Canadian Medical Association, the Canadian Nurses Association, and Health and Welfare Canada. A special committee made up of representatives from all these organizations was eventually formed. I would like to take the opportunity today to thank the members of this committee for their invaluable assistance in organizing this colloquium.

This event is a first for the Economic Council, since we have never before sponsored a conference on health care. Gathered together here we have specialists from many different fields, including health care administration, government, geriatric care, as well as scientific and social research. I extend a warm welcome to one and all, especially to those among you who hail from the United States and Europe; your presence here will enhance, and make more rewarding, the exchange of opinions and points of view during the colloquium.

There is no end to media reports on health care issues. We read about cost and frequency of hip joint replacements, kidney transplants, heart and lung transplants. We are told of the risk of cancer and heart disease from smoking and of the danger of inhaling secondary smoke. We are encouraged to do more exercise and apply preventive health care measures. And we read of sometimes heroic measures taken to keep a patient alive at the end of a life span.

A generation ago most of these issues did not exist because medical technology was not as advanced and the choice did not exist. Today it is estimated that about 30 per cent of medicare funds in the United States are spent on the 6 per cent of medicare patients who die each year – about five times as much on patients who are dying than on other medicare patients. Quite likely the figures for Canada are even higher as the Canadian rate of institutionalizing the elderly is nearly double that of the United States. Not all terminally-ill patients, however, are elderly persons. An estimated 100 Canadian children, for example, die annually of liver disease of these 20 to 30 could be saved by a transplant at a cost of about $100,000 each.

Obviously health care does not come cheaply. In total, Canada's health expenditures have grown much more rapidly than Canada's economy. They have increased tenfold – from $3.3 billion in 1965 to over $35 billion in 1985. We know that better health care will benefit all Canadians. But we also know that our tax dollar will only go so far. At present about three-quarters of Canada's health expenditures are funded through government. Public health expenditures exceed $25 billion while the annual federal deficit runs at $30 billion, so it is clear that cost-effectiveness in health care matters.

Cost/benefit analysis is a useful tool when precise information on resource use and industry output is available. Difficulties arise in analyzing the cost effectiveness of health resources because the real output – the improvement in health status – cannot be measured. Substitute measures such as life expectancy and mortality rates, often used in international comparisons, are only vaguely related to variations in health expenditures or the quality of health services. This lack of precision, however, should not deter us from decision making, provided we set objectives and priorities with great care.

Most industrialized countries view certain basic health care services as necessities to which every member of society should have access regardless of ability to pay. While this proposition is widely shared among nations, they have adopted different approaches to guaranteed access. Some have decided this requires nationalization of both the production and the financing of health services (as, for example, the United Kingdom). Others have sought to provide guarantees with minimal intrusion of the public sector (as, for example, the United States). Canadians have chosen to nationalize most of the financing but not the production of health services.

Government-funded hospital and medical insurance programs were introduced in Canada during the late 1950s and the 1960s. Among the principal goals were *accessibility* – to ensure citizens reasonable access to insured health services; *universality* – to ensure citizens uniform standards of coverage regardless of age, state of health, or income; and *public administration* – to ensure health care administered on a non-profit basis under government supervision. By and large these goals have been achieved. Today, the trauma of illness is no longer aggravated by the burden of hospital and medical bills at a time when patient and family are most vulnerable.

In our discussions today and tomorrow, we will focus our attention on the delivery of health care services to the elderly and on the optimal use of limited health-care resources in Canada. This main theme will be explored from the economic standpoints of the demand, supply, and cost of health care services. We should not restrict our examination to the present-day situation, but we should also investigate possible ways to improve the system. In the end, I hope that our discussions, guided by the contributions of our speakers, will enable us to identify the changes that need to be made to our health care system, as well as the measures required to make this adaptation process as painless as possible.

This focus in the discussion has been chosen deliberately. Canada's policies of expenditure restraint have been arbitrary without careful priority setting. True, there have been efforts to rationalize existing services by eliminating duplication, by modernizing health care facilities, and by improving their cost effectiveness, while keeping in mind the underlying commitment to quality care. What has been missing to date is a careful focus on how the system should be redesigned to modify the underlying incentive structure and the basic objectives of the health care system. For example,

1. Will new patient and morbidity-oriented accounting systems – based on Diagnosis Related Groups (DRGs) – help reduce hospital operating expenditures?

2. With nearly half the hospital beds in Canada devoted to patients of 65 years and over today, would a DRG system lower the quality of care for the future?

3. Would greater emphasis on health maintenance reduce the need for more intensive care?

4. What are some of the alternatives and how different might Canada's health care system be in future from what it is today?

These are some of the issues which will be addressed by this colloquium. I have read the speakers' papers and I know you will be impressed with what they have to say. We have allowed ample time for discussion and we hope you will contribute freely to the exchange of ideas. In approaching you to participate at this colloquium we aimed for a wide-ranging representation of the health care sector. Many of us are concerned about government expenditures, cost-effectiveness of health care services, and future developments.

In our attempt to address these concerns, however, we need to be sensitive to the human issues. As one of our speakers put it: "Let us be guided by humanitarian principles not merely by cost considerations. It would be a tragic irony if, as a result of our recommendations and actions, we commit our elders, and ultimately ourselves, to lives of such poor quality that we are led to doubt the value of survivorship."

2 International Perspective

William A. Glaser

Health is a utopian field: its methods are uncertain and its goals cannot be finally attained. Every country has problems in health care, partly because experiences fall short of hopes, partly because policy makers pursue the contradictory aims of unlimited services and limited costs.

The visitor hears complaints in Canada as he does in every other country. One question is whether, in a wider international perspective, some of Canada's problems are much smaller than Canadians think. Are other problems – while real – unavoidable because they seem inherent in all countries with aging populations, advanced medical technologies, and democratic politics? Can other Canadian problems be alleviated by reforms already practiced by other countries?

Canada's Problems

Following are the difficulties confronting Canadian health care delivery and finance at present – judging from what the visitor hears and reads. Some problems are more and others are less serious.

Control over costs — At times the annual rate of increase rises and the share of GNP grows.

Doctors complain about inadequate incomes — Great disputes arise throughout the country, when some provinces allow doctors to earn extra income by extra-billing over the official fee schedules.

Doctors are increasing in numbers beyond the growth in the population's needs — Money is wasted on their education. Money is wasted and patients' health is jeopardized if the surplus of doctors generate unnecessary work.

Health services focus excessively on inpatient acute care — More services should be given extramurally. Numbers of beds and of hospitals should be reduced. More services should be provided for the elderly's long-term care needs.

Hospitals might be "underfunded" in capital — Buildings and equipment may gradually become obsolete. Doctors cannot use the latest innovations.

User charges are proposed by some and denounced by others — Proponents argue that users will be motivated to shop more selectively for the most efficient provider, to avoid unnecessary visits. Critics argue that the poor will be deterred from getting the care they need.

Insurance premiums – obligatory or voluntary – are proposed by some and denounced by others — Proponents argue that current financing is too redistributive, since the heaviest taxpayers are the lowest users, and the smaller taxpayers are not cost-conscious. Insurance premiums associate rates to the costs of the system, the advocates of premiums say, and everyone will become more cost-conscious. On the other hand, critics of a premium system argue that it is too regressive. If a voluntary and competitive insurance market develops, they add, it will deteriorate through adverse selection among plans.

While this list seems formidable to Canadians, it could be longer. Some problems found in other countries are conspicuously absent. For example, Canada does not have widespread problems of undercoverage of persons and omission of acute-care benefits. These problems exist in the United States and have increased recently.

Controlling Costs

Canadian Performance and Foreign Perception

Canadians think that health care costs are too high and some times rise uncontrollably. Increases in total spending fluctuate from one year to the next in every country – and they do in Canada. Following are the annual increases in total health expenditures in Canada as a multiple of the general rate of inflation. (For example, 1.7 means that total expenditures rose 1.7 times as fast as the increase in the consumer price index. The extra increases – i.e., the 0.7 in addition to 1.0 – were due to greater utilization, greater service intensity, and health-specific price increases beyond the general inflation rate.)[1]

1971	4.8	1977	1.2
1972	2.0	1978	1.1
1973	1.6	1979	1.3
1974	1.6	1980	1.6
1975	1.9	1981	1.3
1976	1.9	1982	1.7

Several reasons explain the fluctuation in health spending from one year to the next in Canada:

Changing policies — Canada (like other countries) allows hospitals to improve wages and facilities some years and deliberately controls costs at other times. The same payment system can be administered generously during some years and strictly during others.

Disorder in the general economy — Grantors, rate setters, and negotiators are supposed to let hospitals and doctors keep pace with inflation, so they can pay their workers and suppliers at market prices. During periods of high general inflation (such as the mid-1970s in Canada), the payments to health providers overshoot the target, and the health sector gets more money than intended.

Decline in the economy — The health care reimbursement system in every developed country automatically increases spending on health every year. If the general economy declines, the relative growth of health spending seems larger than it did in previous years. Europe has experienced such large increases in the share of GDP going into social security – both pensions and health – during its recession of the late 1970s.[2] Canada had the same experience in 1982.

In contrast to the pessimistic views one hears in Canada, Europeans do not think that Canada has serious problems of controlling health care costs. Many think that Canada is a model of cost containment, since the proportions of GDP going into health have remained stationary in Canada for periods, while constantly rising in other countries. The proportions in Canada are:[3]

1971	7.5	1977	7.3
1972	7.3	1978	7.2
1973	7.0	1979	7.1
1974	6.9	1980	7.3
1975	7.4	1981	7.5
1976	7.3	1982	8.2

The Europeans look at recent Canadian figures but rarely look back to the great increases earlier, after enactment of HIDS and Medicare. The rapidly increasing proportions of GDP going to health in Canada over this long period were:[4]

1950	2.7
1955	2.9
1960	5.6
1965	6.1
1970	7.1

Methods of Controlling Costs Through Reimbursement Methods

Canada has become a model for many other countries because they believe Canada has been the first to perfect certain payment methods that effectively control costs. (Even if Canada in practice has fluctuated, many Europeans imagine it has been strict and stable.) These Canadian methods have been:

Paying hospitals by global budgets — In contrast, Europe (except for Britain and Sweden) has paid hospitals by daily rates, the rates have been set by laborious regulatory methods swinging between permissiveness and contention, and hospital costs appear to have risen faster than Canada's. France recently adopted a system of global budgeting modelled after Quebec's; Holland and others are now trying to emulate Canadian global budgeting under their insurance systems.

Freezing doctors' fees for an entire year at a time — Ontario, Quebec, and several other provinces were moderating the rise in medical care costs by such freezes as early as the mid-1970s. In the past, European health insurance carriers and even Britain's National Health Service were forced to negotiate with the medical association every year and automatically grant increases. The annual bargaining sessions continue abroad, but sometimes (as in France) the payers now offer almost no increases. Unexpectedly, the United States has recently been forced to follow the Canadian lead by freezing its fees under (American) Medicare.

Canadians know that their methods have had drawbacks. Hospital managers complain they were once promised adequate funding and discretion, but top-down grants from provincial governments have ignored their needs and left them with no recourse. They complain that their appeals receive short shrift.

During those years, did Europe pay hospitals by methods that could have been administered more successfully? In practice, European techniques inherently invited greater cost inflation and greater administrative complexity than the Canadian experience.[5]

- Europe (except for Britain and Scandinavia) had national health insurance. While Canadian provincial governments paid all hospitals their full operating budgets from general revenue – shared for several decades by Ottawa's grants to provinces – European health insurance carriers paid hospitals from their own revenue from payroll taxes. Rates in many European countries were set by regulators employed by government. Since government was not paying from its central budget, and since the sickness funds were private, the regulators for many years were generous to the hospitals. Only after the payroll taxes became too high and government had to rescue the sickness funds from deficits did the regulatory system become strict.

- Since every country's health insurance had multiple payers, the per diem charge was kept as the European unit of payment. The hospital billed the various sickness funds according to their subscribers' total patient-days. Only when one payer covered an entire population – as in Canada, Britain, and Sweden – was the per diem unnecessary. One disadvantage of the per diem in Europe was a persistent underestimate of utilization at the time the next year's prospective budget and rate were screened by the regulator: when admissions and lengths of stay were greater than expected, hospitals earned higher profits and sickness funds had greater costs than they had budgeted. Because fewer patient-days would cause revenue to fall below the hospital's approved prospective budget, the hospital had disincentives against reducing lengths of stay and treating more patients in ambulatory or in-home care.

- In order to reduce pressure to raise payroll taxes and to obtain government subsidies, governments in all the countries with rate regulation during the 1970s wrote guidelines and sent them to regulators. An extremely complicated and contentious system resulted. Several agencies in the capital city had to consult. Formulae had to be written in relation to certain macrostatistics, such as expected increases in GDP, CPI, wages, and so on. Different rules about allowable annual increases applied to different lines in hospital prospective budgets. All regulators throughout the country had to be trained to apply the guidelines in the same way. When allowable annual increases were low, the system was swamped by appeals. By the 1980s, France, Holland, and several other European countries had succeeded in limiting annual increases in hospital costs to the growth in GDP or CPI – i.e., they had become at least as successful in cost containment as Canada – but their systems were very complicated and contentious.

- Oriented to calculating the allowable increases in prospective budgets and daily rates, the regulatory systems could not reduce overbedding and overutilization.

- Oriented toward screening operating budgets and operating revenue, the regulatory systems could not co-ordinate with national hospital planning and investment.

In accomplishing comparable levels of cost containment, Canada did not share the foregoing defects:

1. Individual units of payment did not have to be calculated. The payer did not have to be billed by the hospital.

2. Increased utilization did not automatically force the Ministry of Health to pay more and yielded no windfall gains to hospitals.

3. Government did not have to write elaborate guidelines justifying annual changes in payments. Hospitals could not appeal over application of guidelines to their individual cases.

4. If any hospitals had empty beds and excessive stays, the Ministry could press them to reduce capacity or to close.

5. Since each Ministry granted each hospital's capital as well as operating costs, it could co-ordinate them.

For these reasons, Europeans eventually sought to copy the Canadian system, not export their own.

In one respect, the European systems have a useful device lacking in Canada. Every hospital justifies its past cost overruns and prospective budgets by pointing to more intensive and steadily higher utilization. These claims baffle budget screeners in Canadian Ministries of Health; they cannot know the intricacies of hospital work flows. But local offices of European sickness funds know a great deal about nearby hospitals' efficiency and quality. In recent reforms, several European governments now call on the sickness funds to screen the hospitals' predicted utilization and their prospective budgets, providing the rate regulators with better insights into the hospitals' claims. In addition, the sickness funds continue their traditional role as organized representatives of the consumers, while Canada lacks any.

Controlling Costs Depends on Both Methods of Payment and Methods of Ownership

At first, the three principal forms of health care organization were those of continental Europe, Britain, and the United States. Because the Canadian Medical Association and hospitals opposed the governmental ownership and management found in Britain, could not survive financially under the completely private arrangements Canada shared with the United States, and could not organize European-type statutory universal health insurance, Canada developed a hybrid:

	System	Ownership and management of acute facilities	Financing
Europe	National health insurance	Private, municipal	Private, based on payroll taxes
Britain	National health insurance	National government	Government
United States	Private	Private, municipal	Predominantly private
Canada		Private, municipal	Government

Because of the discipline of government budgeting, Canada has controlled health care costs more strictly than continental Europe. But because its hospitals continue to be owned and managed by private voluntary associations and by municipalities, Canada has not been able to control hospital costs as tightly as Britain. In particular, when a Canadian provincial Ministry of Health tries to force an underutilized hospital to reduce its stays or to close, the management arouses community protests and the Ministry often backs away. In contrast, Britain's National Health Service has been the most successful system in reallocating resources and facilities, closing underutilized hospitals, creating new ones in other communities, and creating new community facilities – all within budget caps lower than Canada's.[6]

Canadian governments' limited managerial authority over doctors and hospitals enables the clinicians to make decisions contradicting cost containment and other public policies. The doctors can then present reasons for not reducing facilities and expenditures. For example, Canada may be the only country where length of stay has increased. Everywhere else, length of stay has steadily decreased, enabling countries to handle more admissions with the same or fewer beds. (Length of stay in all non-psychiatric hospitals between 1970 and 1980 decreased 24.9 per cent in England, 26.2 per cent in France, 20.9 per cent in Germany, 24.0 per cent in Holland, 32.9 per cent in Switzerland, and by varying percentages in other countries, but it increased 11.3 per cent in Canada.)[7]

Ages of Populations

If Canada's health care costs are lower than many other countries, one reason is demography and not merely the system. The elderly are increasingly costly to treat in every society. But Canada has fewer of them than any developed country: in 1985, 10 per cent of the total Canadian population was aged 65 and over, while the proportions in the United States and European countries fall between 12 and 16 per cent.[8]

Extra-Billing by Doctors

In every country, government and the medical profession eventually have a serious dispute over some issue in the statutory medical care program. Often the dispute concerns the right of doctors to bill patients over the official rate paid by third parties. Eventually government forbids extra-billing by doctors who practice under the official scheme. The cycle is familiar:[9]

1. The medical profession at first opposes the initial passage of the law, from fear that its fees and practices will be controlled by laymen. To appease the doctors, the wording in the law about determination of fees is left ambiguous.

2. Two arrangements contain the seeds of future trouble:

    a) Cash benefits – Doctors are supposed to receive full payment from the patient. The latter then recovers a fixed fraction from the third party.

    b) Opting-out – The doctor may choose between billing the official payers at the standard rate or billing the patients directly at rates the doctor decides. In the latter situation, patients then try to recover from the third parties.

3. In contrast to their earlier hostility toward enactment of national health insurance, the doctors at first are pleasantly surprised. In order to buy their co-operation, the sickness funds and governments set the initial fee schedules at very generous levels. At once the doctors no longer have bad debts and collection costs, all are paid high rates for every procedure. Incomes of doctors are

levelled upward: in contrast to the wide inequalities of previous years, all doctors join the highest income groups of society. The medical profession quickly assumes that it always received such high incomes and develops theories to justify them. The doctors assume that they always will remain at such levels.

4. From the start of national health insurance, the most famous urban specialists opt out in whole or in part. Having charged the highest fees before, now they raise fees further. Their patients do not protest, since they have always paid well for such care, they may recover some of their payments from the official NHI sickness funds, and many are covered by generous private commercial insurance. Opting-out is most common in the biggest cities and richest districts. At first, the great majority of other doctors do not extra-bill, since the official rates provide great windfalls.

5. Fundamental conflicts then develop between the medical profession and the payers (the sickness funds backed up by government). Disputes intensify over the official rates negotiated between the sickness funds and the medical association, over doctors' rights to extra-bill patients, and over reimbursement of patients whose doctors opt out.

a) The sickness funds cannot afford to increase fees in the annual negotiations as much as the medical profession demands, government refuses to keep raising payroll taxes and subsidies, and the increases in fees eventually slow. The sickness funds try to impose controls over doctors with suspiciously high utilization.

b) In cash-benefits systems – as in France and Belgium – doctors bill patients for steadily larger amounts than the patients can collect from the third parties.

c) In schemes with direct third-party reimbursements – as in Canada – more doctors try to extra-bill patients by opting-out.

d) The leading doctors become drawn into the rules and price controls of the official schemes, as coverage of the population under NHI spreads into the upper classes. Opportunities in unregulated private practice diminish as private clinics become more difficult to maintain. The leading doctors once ignored NHI but now support the militant policies of the medical association.

e) Public opinion gradually protests against the deterioration of the system. The population was promised "free" medical care and no longer gets it. Often it blames "those politicians" and not "their" doctors.

6. Eventually the head of the government must intervene. A new compromise is devised with the medical profession and is enacted into law. (The resolution must be a compromise because the population reveres doctors and because politicians fear being blamed for strikes and deadlocks.)

a) Extra-billing was always forbidden under direct-payment systems (whereby third parties pay doctors in full) and continue so. (It survives today only in illegal under-the-table tips in eastern Europe.)

b) Extra-billing is explicitly forbidden under cash-benefits systems. In practice, as in France and Sweden during the 1970s, the third parties handle more of the bills and pay the doctors directly.

c) Doctors retain the right to opt out, but their patients are reimbursed little or nothing. Sickness funds and government denounce opting-out, and it becomes less frequent. Younger doctors become accustomed to sending all their bills to the sickness funds and collecting no more than the official fees.

d) Leading doctors are persuaded to conduct more of their practice through the official scheme. One method (as in France) is official authorization to extra-bill. Another method is to allow the non-profit and public hospitals to give facilities to their service chiefs for their private practices, and the sickness funds cover the costs in their reimbursement to hospitals. The leading doctors can still earn considerable extra money under unregulated private practice supported by private health insurance.

Canada has followed the common cycle, with some essential differences:

1. As in so many topics, Canada did not adopt a single national policy but allowed a range of provincial policies. The doctors in restrictive provinces could point to Ontario and Alberta as models which they should be allowed to follow. Finance officers and managers pointed to Quebec as a model of how to enunciate and implement a policy. Divisions within the country fueled the confusion and conflict.

2. As in so many topics, Canada was too close geographically to a most seductive country that it cannot emulate, viz., the United States. Canadian doctors envied

the freedom and incomes of American counterparts. Ontario was comparable to New York in its clinical practice, but its doctors lagged farther behind American incomes.

3. Opting-out from Canada's direct-payment system was not penalized as severely as in most countries. Patients in Ontario and Alberta could recover the full official charges from the provincial government. The method resembled the relation between American doctors and their third parties. Quebec emulated European direct-payment systems by banning all reimbursement of patients, but it had to face down a strike by its specialists.

4. The leading Canadian doctors were involved in the dispute from the beginning. The entire population was covered from the start of Medicare, private health insurance of basic benefits was banned, and all doctors had to treat all their patients at the standard rates at once. Since they could not postpone confronting the leading doctors – as did other countries – Canadian provinces offered all doctors the high fees previously earned by the leaders alone. As a result, Canadian health care costs suddenly jumped during the first years of Medicare.[10] As the province limited fees, leading doctors led the protests, and many in Ontario opted out. If opting-out is eliminated the Canadian system will leave no opportunities – still available abroad – for some higher fees by the leading doctors.

Increased Numbers of Doctors

Once the public and politicians of every country assumed that, since health care depended on doctors, more doctors improved health. More medical schools were created and classes in existing schools were expanded. Canada's medical profession expanded even more because of heavy immigration.

By the late 1970s, nearly every country had second thoughts. Numbers of doctors already seemed sufficient, and many more were coming through the educational pipeline. Instead of improving care, more doctors might be producing unnecessary work and higher costs. Health might not be improved by overmedicalized acute care but by a service mix including social supports and paramedical work.

Reducing the production of new doctors has proved very difficult. In Europe, medical schools usually are not managed by the Ministries of Health that plan the manpower and try to restrain costs, but by the Ministries of Education that resist reductions in their activities. Ministries of Health and Finance can halt the expansion of medical schools but cannot win the budgetary struggles to cut them back, since politicians shrink from hearing again the old cries of "doctor shortages" and since universities are powerful pressure groups.

Canada has experienced the same political obstacles to a quick reversal to the expansion of the medical profession.[11] But it has acted more decisively than other countries, thereby again providing lessons to them. First, Canada swiftly curbed the immigration of doctors.[12] More recently it has been the first to cut back medical school enrollments significantly. It can do so because of its decentralization: some provinces reduce entering classes (Quebec, Manitoba, and British Columbia) while others (notably Ontario) hold fast.[13] If support for Canadian medical schools had been a unified national policy, as it is in most countries, the regions with the most influential medical schools (such as Ontario) might have successfully blocked any changes in the *status quo* anywhere.

Reallocating Resources

Proposals to redirect resources from acute inpatient facilities are heard in Canada as in other countries. Most countries find them very difficult to implement, but Canada is more successful than most. The requirements for such reforms are:

Co-ordinated financing of both inpatient acute care and its substitutes — The provincial Ministry of Health in Canada has an incentive to save money by encouraging hospitals and other organizations to develop day care, home care, ambulatory services, and other alternatives. It employs civil servants who can negotiate such substitution with the hospitals. Except in countries with national health services – such as Britain and Sweden – separate services are paid by different procedures and often by different payers. Sickness funds lack sufficient power over hospitals to advise them to reorganize, and they lack employees qualified to propose new methods.

The medical profession can treat the same patient in different settings — The hospital doctor does not lose fees or salary if his patients are treated in day care, home care, ambulatory centres, or private offices. North America is one of the few places where this is possible: the open-staff medical structures of Canadian and American hospitals mean that inpatient hospital doctors do not lose money by referrals to other modes. In contrast, the distinction in organization and payment between full-time hospital doctors and full-time office doctors in Europe is an obstacle to referrals, and it is an important reason for Europe's longer hospital stays. (Only in the European private clinics owned by closed groups of doctors is there flexibility in practice setting.)

Exposure to innovations — Mentally close to Britain and geographically close to the United States, Canada is kept informed of new developments in home care and in other extramural methods. Canada contributed by pioneering in day surgery. (Proximity to America's innovative system has cost-raising drawbacks as well as efficiency-raising advantages: Canadian doctors press their hospitals to install the new technology they hear about in the United States, and American equipment companies can easily send their salesmen across the border.)

Ownership and management of all services — In this respect, Canada is lacking. Its owners and managers specialize in individual organizations and are preoccupied with protecting them from cuts. The best example of massive reallocation of resources is Britain's National Health Service, where the single owners write and implement plans, squeeze down declining hospitals and create alternative facilities. Several American for-profit vertically integrated health care corporations try to create such efficient systems, since they sell insurance, employ the doctors, and own the full range of hospitals, nursing homes, home care programs, and suppliers. The power of non-profit owners, communities, and hospital medical staffs prevent Canada from accomplishing the same sweeping reallocation as Britain.

When financing and ownership are not unified, regional health-services planning cannot succeed. Regional planning is often commended, but most health planning has been designed to set priorities for the geographical allocation of public money for new hospital beds. Canada's limited health planning has been typical of most countries. Only the Quebec government has tried to go further and plan regional mixes of services, but the Quebec hospital owners and medical profession block ambitious development and implementation. Because it unifies ownership, managing, financing of capital, and financing of operating costs, Britain alone has successful regional planning both on paper and in practice.[14]

Long-Term Care

Aging populations consume higher amounts of acute care from hospitals and doctors. In addition, they need support for chronic disabilities in nursing homes, home health services, and community-based social services. Every country confronts steadily greater problems of creating the full mix of facilities, training and managing the personnel, co-ordinating the services, referring each person to the services (s)he needs, and covering the costs. While Canada has fewer elderly than any other developed country, it inevitably moves in the same paths.

Canada has the same needs, the same shortages, and the same dilemmas as every other developed country. Creating an appropriate and economical system of long-term care is difficult and still unsolved everywhere.[15] Following are a few highlights.

Creating Services

The elderly have a wide range of needs in every society: acute services, extended care hospitals, nursing homes, home supports, meals, appropriate housing, etc. Once the non-acute needs were satisfied by families and churches. The elderly increase in numbers and longevity in every country, at the same time families and churches are declining in their capacities. A few countries have a past history of special programs: home services in Britain and Holland, congregate housing in Scandinavia and Holland, nursing homes in France, and so on. But every country (like Canada) has great shortages of certain services.

Ownership and Management

If a country's regulatory and reimbursement policy makes it difficult for for-profit firms to create and operate health services – such as Holland – then charitable associations run them all. But most countries rely on whatever agencies are willing to create programs for the aged in a short time. The result in Canada as in many other countries is predominant market share by for-profit businessmen in the ownership and management of nursing homes, home health services, and many home-help programs. Accusations about diversion of patients' pension checks, underservicing of patients, and fraudulent overbilling of public payers arise in the United States, Great Britain, and occasionally elsewhere. Perhaps Canada can escape this experience, either because of higher public ethics or because of luck.

Financing Method and the Resulting Costs

Direct coverage of the entire population from general revenue has been adopted by Canada, Sweden, and Britain for acute care. Canada, Sweden, and Britain have extended it to the elderly's needs for nursing homes (in Canada) and for home care (in Sweden, Britain, and a modest program in Canada). Tax-supported, long-term care can seriously exceed initial cost expectations, as demonstrated by America's categorical nursing home benefits for the poor elderly.

Most countries use insurance mechanisms for health costs. The elderly's heavy utilization of acute services has so burdened the sickness funds that Ministries of Finance nearly everywhere have blocked addition of long-term care to national health insurance. The only exception is the Netherlands, which added universal statutory health insurance for chronic disability during the 1960s. The Dutch system has provided funds for the construction of many new nursing homes by non-profit owners and has underwritten generous home services. But the high costs have been a principal reason why Holland's health services have become nearly the most expensive in the world.

No one agrees to any budget-neutral tradeoff, whereby long-term care for the elderly is added while acute benefits for everyone else are cut back.

Therefore, if Canadian finance officers resist the expansion of eligibility and benefits in long-term care, they are following a general path. However, once a benefit is supported by general revenue and becomes a right of all citizens – principles inherent in the Canadian system – a cost explosion is very difficult to control.[16]

User Charges

National health insurance, national health services, and the hybrid Canadian acute-care system have no- or low-user charges. Bordering on the country with the highest patient cost-sharing of any developed country, Canada has had a long debate whether user charges improve efficiency, bring revenue, or block clinically desirable use.[17] But in Europe, acute-care user charges are moot for elderly patients: full charges apply only to younger patients, and they are waived or reduced for the older.

Long-term care is a different matter, since it involves housing, food, and personal services that the elderly customarily pay for. Nearly all the elderly everywhere receive pensions. Where nursing homes and other services are not paid for by a third party, elderly persons in all countries are expected to pay out-of-pocket in full. Where public insurance or public grants pay, the patient is expected to pay substantial daily co-payments. Otherwise, the taxpayer would be overburdened and the heirs would enjoy a windfall. Only the indigent receive complete coverage from public programs. Interest groups representing the elderly often complain about high out-of-pocket for long-term care – as they do in the United States and probably will in Canada – but full public payment for all is never provided.

Co-ordination

Ideally, the elderly person should be referred promptly back and forth to whatever services (s)he needs. But this never happens in any country. Because of the great variety and the independence of owners and managers of acute and long-term care services, they are fragmented.

One of the most promising American innovations is the Social/Health Maintenance Organization (SHMO) for the elderly.[18] The entire menu of acute and long-term services is provided for an annual subscription fee. The SHMO solves the problems of co-ordination and case management. Universal entitlement and free choice among all providers caused the demise of HMOs under Canada's method of paying for acute care. But SHMOs could be implanted by making them the administrators of all long-term care supported by insurance or by public grants.

Case Managers

Ideally, the elderly person should be guided by someone who can identify his/her needs and who understands the complicated delivery system. Every person covered by the British National Health Service and by Holland's statutory health service is on the list of a general practitioner responsible for his/her care. The British and Dutch GPs can call upon health visitors to guide the patient more closely; in Scandinavia, every such patient should be guided by the local public health nurse. When the patient is hospitalized or institutionalized in a nursing home, the GP may lose track of the patient, although he should not. If the patient goes to a distant nursing home, the patient is transferred to another GP, who may be less conscientious, but the patient still has an official case manager.

Even though the American health care system prizes self-reliance by alert consumers and militates against the widespread creation of case managers, America is also the Promised Land of health services research. Besides the Social/HMOs, many other demonstration projects in case management are now being conducted.

Reforms of the System

Should Canada Change?

The rest of the world sees little reason for Canada to make fundamental changes. When Canadian health care is noticed, it is admired. The Canadian population is healthy, due partly to causes outside of the health services (an invigorating climate, comparatively healthy lifestyles, an affluent environment, and good heredity), and due partly to satisfactory services in public health and in acute care. Access is nearly universal and prompt. Facilities are widespread. Quality is good. Techniques are advanced without overtreatment, without premature adoption, and without excessive waste. Costs are controlled without shortages and waiting lists. Patients have a wide range of choice of doctors and facilities. Labour relations in health are calm. Providers are well paid without exaggeratedly high incomes. Contention is low. Unexpected defects – such as the recent increase in hospital length of stay – can be remedied within the system, if provincial governments and provider associations determine to act.

But Canadian life is paradoxical. Despite being so well off by world standards, Canadians don't sound so positive. Canadian political culture is pessimistic, and many Canadians call for something better. Some proposals for reforms of the Canadian system[9] are heard in other countries too, but they are unrealistic or disadvantageous there. They are not likely to be more feasible or more helpful in Canada.

Privatization

All acute-care funding passes through government budgets in Canada. Ministries of Health have a powerful voice over levels of provision, the creation of new programs, and incomes in the entire health industry. If the payers were private – the critics say – the Canadian system would have more give-and-take, and it would relate levels of provision to patients' needs rather than to the fiscal vagaries of the provincial governments.

But Canada arrived at government financing only because private financing did not work. Health insurance in Europe became part of the social security system, with entire populations eventually joining sickness funds that had previously existed there for many years. Canada never developed such a widespread network of carriers. European national health insurance may be strained as populations age and as economies fluctuate – as recent experiences of Italy and Belgium demonstrate – and countries may eventually be forced to substitute Canadian-style government financing. On the other hand, the United States alone developed a private health insurance system as an alternative to obligatory universal insurance laws, but this was an unexpected result of many labour contracts obtaining generous fringe benefits. Welfare bargaining was not so successful in Canada. The Canadian population needed wider access and the hospitals needed more money for operations and capital, but Canada lacked statutory national health insurance and widespread private welfare bargaining. So, Canada adopted public financing as the only possible solution.

It is easy for political conservatives and economists to dream about a private health market, but how can an actual system be transformed to its opposite? When the Conservative government of Margaret Thatcher came to power in Great Britain, it planned to privatize the National Health Service. The goal was private ownership of the hospitals and financing by European-style national health insurance. The study group and the Cabinet concluded in 1982 that the changes could not be made. Buyers and private managers of the hospitals did not exist. Britain's prewar Friendly Societies had been inefficient and disappeared long ago, and the country lacked the administrative infrastructure to create a complete system of new sickness funds. Britain had no experience in private-rate negotiation between sickness funds and providers. Converting general taxes into social security taxes might produce confusion and financial shortfalls. Converting global budgets into unit payments by sickness funds would produce windfalls for some hospitals and deficits for others. Cushioning the transition would necessitate great increases in spending. Without strict planning and supervision the hospitals might become wasteful. The hospital workers' unions would fight privatization of management. Monitoring a contentious private system might lead to a larger bureaucracy and more regulations than the National Health Service has at present. Any transformation in Canada founders on the same dilemmas.

Consumer Sovereignty

Some critics of both Canadian-style public financing and European statutory health insurance say that patients and payers should be the same. Let the patient pay his own money – with or without some public subsidization through vouchers. In contrast to the present situation in Canada and Europe, the patient-consumers will be cost-conscious, will avoid unnecessary utilization, will shop among competing price-cutting providers, and will force the system to become "efficient."

Placing the patient at risk of losing his money, letting him decide the trade-off between money and health – this may sound ideal, but it flies in the face of history. Health-care financing is not like other markets and it never has been. In every country, it has always been highly redistributive. Once the mechanisms were financing by a mixture of personal cash, private charity, and pooling through guilds; now in every country it is a mixture of insurance pooling, tax-supported grants, and a little personal cash. Public policy in every country has steadily increased the commitment to provide care for the needy, build up health facilities, and extract the money from those with the ability to pay.

The proposals to make the consumer sovereign ignore the traditional authority structure in health. In every country, the medical profession has long been conceded the full power to diagnose patients needs, invent remedies, and apply the remedies. When facing doctors, nearly every patient is dependent and deferential. The new forms of critical scrutiny such as utilization review, quality review, and technology assessment – are forms of professional self-government. Third parties have risen in power only to bargain over levels of funding and to ensure that the professionals deliver adequate services.

Let Consumers Decide Their Needs and Coverage

Advocates of freer markets and consumer choice complain that the Canadian system is too standardized. Every citizen pays taxes and is entitled to identical benefits. Ideally, the individual should be able to choose less coverage and in return should receive a cash rebate or substitute benefits.

No country with a statutory program allows the citizen or the insured to opt out in whole or in part. The person is free not to use the official scheme. He can substitute private insurance in whole or in part. But he receives no rebate, because that would subvert the redistributive character of the financing system, whereby the payers who under-use support, the heavy users who underpay. If the healthy could opt out, adverse selection would bankrupt the system. Government financing would not be substantially reduced, since government would be compelled to create categorical programs for the sick and poor. Health care would vary by social class, a past practice that modern redistributive financing was designed to eliminate.

The only developed country with such extensive consumer choice among insurance plans is the United States, since it lacks any universal statutory method. The American individual insurance market is very competitive and unstable: individuals buy new policies, let them lapse, go without coverage for a while, and buy something else; insurance companies have high marketing costs to keep old subscribers and add new ones; insurers frequently raise premiums or other benefits to stay solvent. As long as it had many subscribers in employer-based groups and in individual community-rated policies, Blue Cross/Blue Shield could weather the financial stresses of adverse selection, but recently the true consumers – the employers – have started a new form of adverse selection. In order to reduce their costs of employee health benefits, many American employers have stopped buying group insurance and self-insure. If their workers have low utilization, they pay out very little. If the costs of family coverage are high, the employer refuses to pay for it but requires the worker to pay premiums. Many workers and families are expected to pay high deductibles for their physician bills, thus reducing that coverage to the catastrophic bills that burden employers very little. This reversion back to an earlier stage of health-care financing no doubt will eventually reactivate in the United States proposals for statutory universal health insurance (as in Europe) and proposals for full-public financing (as in Canada).

Reorganize Medical Practice

Some critics in Canada and Europe argue that the incentives and work organization breed inefficiency, waste, and profiteering. Fee-for-service and individual self-employment should be replaced.

Health Maintenance Organizations have long been commended by some Americans as a competitive alternative to fee-for-service self-employment. HMOs were said to facilitate informed consumer choice, increase efficiency, foster professional responsibility, and reduce costs. Reading the euphoric American literature, some European health economists have recommended widespread adoption of HMOs in their countries.[20] And some Canadians echo them.

Even if Canada's medical practice could be transformed completely or partially into such prepaid multi-specialty groups, the efficiencies and financial savings will probably be considerably less than expected. After decades of myth, careful evaluation research is finally being done in the United States. Some apparent savings are due to "enrollment bias"; many HMOs contract with employers with healthier employee groups; only recently have the elderly been able to use Medicare to join HMOs. In the actual operations of HMOs and fee-for-service office doctors, HMOs save money by doing more work in the health centre than in the hospital. Otherwise, HMOs on the average are not cheaper or more efficient than office practice.[21]

Regardless of their merits, HMOs cannot be created on a large scale. They are not a new reform but an ancient one. Many sickness funds began during the nineteenth and early twentieth centuries as prepaid closed panels. A principal goal of the medical profession in every country has been to abolish them and its agreement to national health insurance laws has always been contingent on the legal right of every doctor to treat insured patients, free choice of doctor by patients, and pledges by the sickness funds not to maintain special facilities. HMOs can survive only if governments and sickness funds give them large subsidies and lock their subscribers into them, but such measures are not only forbidden by law but contradict the free-market philosophy of their admirers. Even with special help – as in the United States – few doctors join HMOs and patients prefer the open market.[22]

Pay Doctors Differently

Critics of current medical payment denounce the supposed perverse incentives and call for flat rates. But like other attractive ideas, reality cannot be magically transformed. Whether it is the modern affluent urban specialist, the medieval surgeon, or the village healer and village midwife in the Third World, fee-for-service is remarkably universal and durable. Only small numbers of doctors have ever been paid full-time capitation fees and full-time salaries. Capitation was used by closed-panel sickness funds in past centuries and has been replaced by fee-for-service either in whole (in Germany and Denmark) or in part (by the many special fees in Britain). Capitation fits only general practice, and specialists are paid by fees or salaries. Capitation does not limit costs as well as once predicted, since the GPs successfully press for generous practice allowances and for parity with specialists incomes (as in Holland and Britain).

Full-time salaried practice is becoming more common among specialists in European hospitals and even among GPs in a few countries (such as Sweden). It implies vertical organization, controls, and regional or national collective bargaining with the medical association – all far from many reformers' preference for more freedom and competition. Often salaried systems are lower rather than better in efficiency and economy. Salaried doctors work fixed hours and may put in less time than fee-for-service doctors, as Europe has seen. Salaried full-timers press their hospitals to install advanced equipment as a condition for their acceptance of the jobs, and the result (particularly in academic medical centres) is very expensive practice. To attract leading specialists to full-time jobs, hospitals and governments in Europe must agree to very high salaries nearly equal to their gross incomes from fee-for-service private practice and much higher than their previous net incomes.

The Canadian version of fee-for-service may invite a serious cost explosion. Even if provincial ministries refuse to increase fees, the doctors can maintain their income by ordering more work for themselves or by sharing the same patient more widely ("patient commonality" or "ping-ponging"). A growing medical profession can thereby increase total costs of the system despite a stationary population.[23]

Europe has long been aware of provider-induced demand and unnecessary referrals, and several systems lock the patient into the primary physician he chooses first. Some methods could be emulated in Canada.

1. The sickness funds and public financing pay only for the first primary physician. The patient is not allowed to shop except at his own expense – and the GP usually cannot make referral to other GPs for the same services. Duplicate treatments appear in the claims forms for the patient and are challenged in utilization review. A patient can change his GP, but only by giving notice to his sickness fund.

2. The sickness fund pays the specialist's fees only on a referral form issued by the GP.

3. If fee-for-service is abandoned, referral is limited more strictly. Since British and Dutch GPs are paid by capitation, the patient must sign up with one GP and cannot obligate the official schemes to pay for primary care elsewhere. Only the GP can authorize referral to a specialist under these schemes.

Robert L. Kane

Recently my wife and I had the opportunity to meet with a number of people working in health care in several Canadian provinces. Although we were primarily interested in how long-term care was organized and delivered, we were able to observe some things about acute care as well (Kane and Kane 1985*a*). To the American observer the Canadian health care system seems marvelously civilized. One has the sense that an entrepreneurial enterprise could take profitable advantage of the situation, but somehow such behaviour would not be tolerated.

In stark contrast to the American system, the Canadian environment seems surprisingly free of litigation and regulation. Although both countries have systems of care in which public dollars are used to support private providers, the relationship between the providers and the government seems quite different in the two. In the United States, the combination of public money to support private care has led to extensive regulation, which has proven less than effective because of the ready recourse to litigation. The private sector always seems to have the upper hand. In a sense they can continue to press their case at the government's expense, because the costs of the lawsuits are often built into the costs of care.

Until recently the medical care system in the United States enjoyed a rather sacrosanct position. Similar to the way Glaser describes the provincial officials in Canada, American bureaucrats were reluctant to challenge the complex requirements of the medical-industrial empire. The recent shift to prospective payment for the Medicare program and the growing enthusiasm for prepaid capitation reflect the Administration's belief that these strategies offered a means to deal with the problem of controlling costs. The two approaches have in common the shifting of responsibility for decision making from the government to the providers. The former is no longer at political jeopardy for withholding valued services. The government is theoretically able to impose cost constraints at a higher level of aggregation which presents less political risk. This logic sounds very much like what Glaser uses in praise of global budgeting.

The enthusiasm for these strategies does not necessarily guarantee their success. The early reports on DRGs are mixed. There is some belief that we are saving money, or at least cutting back on hospital use. There is also great concern that the secondary effects may well be a reduction in the quality of care. Such concerns are difficult to substantiate because of the laws of large numbers. Indeed there is a growing body of anecdotal data suggesting premature discharge from hospitals. Conversations with almost any American physician will quickly uncover a heightened awareness of the need to watch costs, especially to keep tests and hospital days to a minimum. However, a large study of health insurance effects (Newhouse et al. 1981) showed that user fees (copayments and deductibles) had a substantial impact on utilization of services but no discernible effect on quality (Brook et al. 1983). In contrast, when high-risk populations are examined, the adverse consequences of cutting back services can be profound (Lurie et al. 1984; Brook et al. 1983).

When an American looks at the Canadian system, the question that comes to mind is what are the incentives. In a global budgeting approach one would anticipate that the hospital would be inclined to admit lower-cost patients over more expensive ones, or to keep less costly patients longer. Indeed when we spoke with various officials in the several governments, there was a repeated sense that much of the complaining about the so-called "bed blockers" was more show than reality. In fact, these patients, who were occupying hospital beds while awaiting placement in a long-term care facility, were actually beneficial to the hospital by lowering their average per diem cost. However, despite repeated questioning on the subject, we could not find anyone who acknowledged any awareness of hospitals denying access to heavy-care patients.

The American literature is full of discussions about the need to ration care by one or another device. Studies of the United Kingdom serve as modern morality plays about the social consequences of limiting services (Aaron and Schwartz 1984). The evidence for similar rationing activities in Canada is scant. A few studies show a general pattern of lower utilization of surgery than in the United States (Vayda 1973), but the difference is compatible with Canada's intermediate position between the United Kingdom and the United States. At the same time, there are data to suggest that the same variations in patterns of services occur in Canada (Roos and Roos 1982) as has been described in the United States (Wennberg 1984). However, these variations seem to be more closely linked to the idiosyncracies of practice style than to easily recognized external pressures. The American experience that areas of tense medical competition show dramatic reductions in hospital utilization raises intriguing questions about the effects of medical budgetary policies in Canada. Is the ethos so different that providers do not respond to incentives?

It would be helpful to have better information on the extent to which there are signs of rationing or market skimming as a consequence of global budgeting. Certainly within the variations in the ways the medical care programs are administered and financed across the provinces there is the opportunity to look for such evidence. For a start, it would be intriguing to look at some high-cost technologies. Are they provided at the same rate in areas of comparable medical sophistication? Is there any evidence of a substitution effect where more primary care may be offered in lieu of these more specialized services? Is there evidence of any efforts towards regionalization, and if so are these programs instigated by the government or the providers?

A few caveats are in order about capitation. Basic economic theory argues that the market place is the best arbiter of what is good. The laissez-faire economist argues that those products or services not meeting a demand will not successfully compete. The consumers' protection comes from competition which will stimulate market efficiency. In the case of a prepaid capitation model the consumer who is not satisfied can quit. This potential loss of business is presumed to be a sufficiently strong deterrent to keep the providers sensitive to their clients' preferences. Unfortunately the reality is somewhat different. The consumer in a closed system who is denied care has little recourse. He can complain; he can withdraw. But the system is not necessarily sad to see him go. A capitated system makes money on those who use the system little. Those who make heavy demands on it represent losses and their departure is not mourned.

In fact, what we observe in areas of active competition for medical markets in the United States is vigorous advertising to attract the most desirable clients and often carefully designed benefit packages to lure these preferred groups. In some cases medical care is being marketed in the same tradition as cars and soap. Associations with positive images are fostered. These images may have little to do with those aspects of care many of us believe are essential to good quality.

The Canadian experience with universal health insurance presents an important model for the United States. I strongly endorse R. G. Evans' (1983*a*) contention that we do ourselves a grievous disservice by attempting to keep separate accounts of public dollars and private dollars spent for health care. Indeed much of the American infatuation with the private sector is based on a misunderstanding about the difference in delivering services in response to identified needs or in response to market opportunities. Those in the automobile industry are rewarded on the basis of their sales, not in regard to meeting the transportation requirements of those most in need of it (Hirschman 1970).

Our observations around the long-term care area do permit some comments on successes and failures in Canada. We have elsewhere held up the Canadian experience in extending universal health care coverage to include long-term care as a model worth emulating (Kane and Kane 1985*a*). To the extent that shifts were actually made from acute to long-term care funding, they were possible because of centralized control at the provincial level. However, Glaser is undoubtedly correct in suggesting that coverage of long-term care will require new resources.

Canadians share with their southern neighbours an unsolved problem with the linkage between acute and long-term care (LTC). Although many provinces cover LTC under their health programs, the interface between it and the acute sector remains strained. In some instances resources are duplicated. Long-term care beds are available in both sectors. Opportunities for increased efficiencies are lost because of separate administrations that seek to maximize conflicting goals. More active efforts are needed to facilitate the movement of patients between the spheres. Better discharge planning might reduce the need for institutional care, and closer medical attention within the LTC institutions might prevent hospitalizations.

Glaser suggests that the Social/Health Maintenance Organization (SHMO) might represent a model worthy of Canadian consideration. The SHMO in the United States is better viewed as a concept than a model (Leutz et al. 1985). In effect, several of the provinces have available to them already something even better in the form of regional units responsible for the care of the disabled elderly. In concept, these bodies could readily assume the responsibility for the total care of their clients but the separation of health and social services has prevented any meaningful synthesis. Because these regional bodies cover the whole population, they avoid the problems of selection imposed by capitated programs like the SHMO. Moreover, several of these programs have already developed exemplary case management activities, which seem to have avoided much of the bureaucratic and procedural impedimenta that plague similar efforts in the United States. The major stumbling block to date has been the reluctance of the medical community to accept direction from a program viewed as primarily social.

The SHMO concept implies local control. A visitor from the United Kingdom, just returning from a trip to Canada, was struck with the limitations imposed on planning services for the elderly by the centralization of decision making compared to his country. He worried that if social and medical services were too closely merged at the provincial level, the strength of the hospital lobby would prevent any meaningful redistribution of resources to home care and the like. Certainly the political inequity will be greater at the more central levels of government, but the problem is indigenous to the marriage. It is hard to call the mix of social and medical services an equal partnership under any circumstance. One potential strategy then is to give the power to the weaker group and allow them to buy the favour of their stronger colleagues.

America has been cited as the land of the demonstration project. Nowhere else is so much researched and tested and so little implemented. In the area of long-term care much effort has been spent in the United States examining the potential of community-based care to save institutional dollars. The Canadians began with a different premise, namely that community care was the preferred alternative whenever feasible. From this assumption follows a commitment to develop a network of community-based services, not because they save money – which they do not – but because they are the more desirable way of delivering care.

The United States has experienced a major growth in proprietary hospitals. The American nursing home industry has long been predominantly proprietary, but there has been a remarkable shift in the hospital sector over the last decade. This growth in proprietary hospitals has spawned a number of foreign subsidiaries. Up to now these proprietary firms have not gained a strong foothold in Canada. As with several states in the United States, the political and social climate has not been supportive. By contrast, proprietary nursing homes are well established in several provinces, but consistently less so than in the United States.

The next step in the evolution of American health care has been the development of chains of facilities (Freedman 1985). These organizations have spread both vertically (linkages of associated enterprises to provide an expanded repertoire of services to a set of clients) and horizontally (linkages of parallel activities to cover a wider set of clients). Although the best known chains are proprietary, the same pattern has been pursued in the non-profit sector. These structures have some potential competitive advantages in capturing clients and controlling the flow of services to patients (or vice versa) as well as some economies of scale. All of this is occurring at a time when mergers are the order of the day in the business community. Some analysts have been noting that the efficacy of these conglomerates remains to be proven. To date in Canada these chains are much less in evidence, although there is some such activity, especially in nursing homes.

The extent of the danger posed by the proprietary system is still hard to assess. In a few instances there has been some evidence of market skimming, whereby the more difficult and expensive services, or cases, are not treated by proprietary hospitals (Pattison and Katz 1983; Watt et al. 1985). Among nursing homes there has been a long-standing controversy about the relative quality of care provided by the two types of homes. Despite the frequently voiced concerns and the compelling argument that a management responsible to shareholders will behave differently from one responsible to the community, there is still no definite study to demonstrate the anticipated differences in quality.

Canada should get over its inferiority complex. It is high time to appreciate that many outsiders view Canadian models as worthy of study and emulation. Canada has to recognize its role as an exporter as well as an importer of ideas. It is not at all clear that Canadians should seek the American entrepreneurial spirit. Nor is it easy to see how things that work in Canada could be implemented in a country where such an ethos reigns.

Betty Havens

Two facts make this discussion imperative. First, the population of Canada and the world is aging, and second, the financial resources available to respond to this changing population and its health care needs are under serious pressure.

Over the last two decades the population of Canada has aged from 7.6 per cent of the population being age 65 and over in 1961 to 9.7 per cent in 1981. This is still considerably less than the 15.1 per cent average for the developed nations of the world. During the same period the proportion of Canadian GDP (Gross Domestic Product) expended on health care has increased from 5.6 per cent in 1961 to 7.5 per cent in 1981, which compares very favourably with the other developed nations of the world. However, we should not be complacent as the proportion of GDP expended on health care in Canada has increased more since 1981 than it did during the entire decade of the 1970s (discussed earlier in this chapter by Professor Glaser).

This is especially problematic as economic growth has steadily weakened since the late 1970s. This has been accompanied by limited tax revenues and rising deficits which plague policy decision makers as they attempt to maintain health care quality and access. They have also been faced by pressures from health care institutions and professionals and an increasingly large and sophisticated consuming public of older Canadians.

Therefore, it is important to consider what can be learned by analyzing programs in other jurisdictions. We must ask and find answers to the questions about transferability of programs, systems, financing, efficiency and effectiveness among jurisdictions whether internal to Canada or from other nations. The changing nature of our older population makes it essential to consider the interface between the formal system and the informal care providers. Consideration of this interface leads to another important issue namely the changing role of women both in consuming health care and in providing health care.

Transfer of Programs, Systems and Financing

In considering the potential to transfer concepts or to implement programs, systems, and financing mechanisms from one jurisdiction to any other jurisdiction, it is necessary to remind ourselves that Canada's health care system is not unitary but rather is a series of 10 provincial systems with many common elements, and also many differences. Professor Glaser has noted some of these differences in his references to those provinces with more centralized control of health care financing such as Quebec and those with greater professional freedom in billing such as Alberta and Ontario. Therefore, if we are to consider changes in programs, systems or financing, we must begin, I believe, by determining whether any of the advantages of one provincial system are capable of being transferred to any or all of the remaining provinces.

For example, if one accepts the premise that Canada has more physicians than it needs and is training more new physicians than it will require, one should expect immigration to be equally curtailed across all provinces and the size of all medical schools to be reduced. To date, some provinces are still allowing virtually open immigration while others have allowed theirs to remain the same or even increase (Ryten 1985). The contradictory value of providing training for one's locally residing students who wish to become physicians and of providing only as many physicians as the population needs causes Ministries of Health and of Education to take opposing positions on the numbers of physicians to be trained. However, one must ask why some provinces are able to implement reductions while others do not. Can Ontario learn anything from Manitoba or Quebec or perhaps closer to the point does Ontario want to reduce its training and therefore does Ontario want to try to learn from Quebec or Manitoba?

In the area of long-term care, several provinces have insured nursing home care but others have not. Those that have, have not been bankrupted by the experience. Therefore, should the other provinces insure nursing home care? Similarly, home care has been universally provided with little or no consumer charge in some provinces but is neither universally available nor publicly subsidized in other provinces. Those provinces that have provided home care have not been adversely affected financially by this decision therefore, should the other provinces provide these services?

Considering these same issues from an international perspective yields the same mixed analysis. That is, there are virtually as many different health care systems, health programs, and financing mechanisms as there are jurisdictions or nations. Specifically there are nations which are increasing medical training and others that are reducing the numbers of health care workers. Some nations have centralized health-service financing and other nations have completely decentralized health-service financing. However, most nations have a mix of training and of financing; that is, most countries are somewhere along these continua rather than at the polar extremes of "pure types." Long-term care issues, questions, and solutions are equally diverse; that is, some nations have predominately institutional forms of long-term care while other long-term care programs are predominately community-based.

Determining and implementing cross-national transferability of health systems is hampered by three major factors: first, the necessity of adequately assessing the historical, cultural, climatic, epidemiological, social and political contexts of both the host and recipient nations (Hokenstad 1985); second, assuring that both adequate and uniform evaluation of all the relevant programs and policies is possible in both countries to enable truly cross-national comparisons; and finally, mounting the political will to cause the transfer to occur (Abel-Smith 1985; Kane and Kane 1985*a*). On the latter point, the political will is by no means restricted to the politicians; that is, consumers, providers, financers, and the formal organizations of these groups must also be committed to any cross-national transfers.

If nations were readily capable of cross-national transfers of all or parts of systems which were viewed as advantageous, then Canada should be served best by making several changes. Surely these would include the following: 1) developing organized representatives of consumers analogous to those of the Sickness Funds in Europe; 2) controlling health care facilities especially hospitals, thereby enabling closures analogous to the National Health Service in the United Kingdom; 3) increasing community-based vertical integration and reducing multiple owners or managers analogous either to the National Health Service or the Health Maintenance Organizations (HMOs) in the United States (albeit universal HMOs would appear to be impossible

[Mechanic 1985]); and 4) implementing regional planning in all sectors such as occurs in the United Kingdom wherein all sectors are owned by the government. These elements would, of course, have to be introduced without loss of the strengths of the Canadian systems.

It should also be noted that there are contradictions across these changes which would require resolution. For example, how or why would one encourage the development of Sickness Fund style consumer representation and simultaneously increase the community-based vertical integration within the system? Further to what extent could one introduce universal (i.e., British not HMO style) community-based vertical integration, given, the physician-based authority structure of health care in Canada and the even stronger privatization emphasis in the United States.

Professor Glaser makes the point that Canadians are mentally close to the United Kingdom and geographically close to the United States, but then, notes that Canadian physicians think like their U.S. colleagues at least about new technology. One is left to wonder how many Canadian physicians echo their A.M.A. colleagues relative to privatization of all medicine if not all health care.

It would appear that there are elements of other systems which would be advantageous to the Canadian health care system; however, there are still serious questions about implementing such strategies. For example, do we have adequate evaluation to be assured that increasing community-based vertical integration would more adequately and securely fund community-based home care programs in Canada? This assumes that all provinces want community-based home care, a hypothesis which, in itself, is still to be tested. We know very little, from hard data, about the cost expectations of community-based long-term care in Canada or the United States. Therefore, if costs exceed those predicted by formulae which are based on assumptions of rational system operations despite the fact that the total system cannot be controlled and is not rational, we tend to fault the program or the formulae. Such fault finding ignores the irrationality of the system, the precariousness of our evaluative measurements, and our methodological inability to assess adequately all the components of two jurisdictions for comparability.

Interface of the Formal System and Informal Care

One of the major concerns surrounding the delivery of health care and especially long-term care to an aging society stems from several demographic realities. It is well documented that our societies are aging at dramatic rates and this is especially dramatic among the very old cohorts. It is also well known, that women are more predominant among the older age cohorts. After age 85, there are almost three women for every one man. It is known that our population is highly mobile with half the population having moved during the past decade and over a third having crossed a provincial boundary with these moves. Finally, we also know that the population over age 65 consumes a greater proportion of the total health care expenditures than they represent as a proportion of the population. Perhaps less well-known is that the members of the present cohorts in their 70s and 80s had very few children during the Baby Depression from 1926-45. Therefore, there are very few adult children to provide care to these cohorts of aging parents and other relatives. It should be noted that this was not true of the previous generations, nor is it true of the next generation who are the parents of the Baby Boom. However, this does not change the fact that the current older population has few younger relatives to call upon for care or other assistance.

Even with this "thinning" of the potentially supportive portion of the population structure, the current older population receives 80 per cent of its care from the informal support network of family, friends, and neighbours. This 80 per cent of care being provided by the informal network has been remarkably consistent over the past two decades and across jurisdictional boundaries (see, for example, Chappell et al. 1986). Therefore only 20 per cent of the care consumed by the older generation is being provided by the formal care system. Families and other members of the informal network have not been deserting or "dumping" their older members. Informal support has continued with the introduction of publicly supported or insured long-term care services in our institutions and in the community.

One of the results of the limited number of adult children is that informal care is more likely to be provided by members of the same or adjacent cohorts; i.e., spouse, siblings, friends and even neighbours who are also old. Therefore, these care providers are themselves more vulnerable and more likely to become consumers of formal health care services. Also they may be less able to act as the link between the client or family and the formal bureaucracy. This is an important role which is often played by children, even those who are geographically remote from their parents (Shanas 1979).

It is, consequently, even more essential that an adequate interface between the formal system and the informal network be forged and then maintained. It is of little value to have informal support provided to an older person at the expense of the health status of the care provider who may become the next formal service consumer (Haug 1985). It is from this perspective that respite care, adult day care, social or intermittent readmissions to facilities become critical to maintaining both the care of the client in the community and the health of the provider. With this interpretation, long-term care programs become a part of the preventive health system as well as part of the care service system. That is, these programs provide a care service to the client and a preventive service to the care provider (Bader 1985; Miller 1985; Rathbone-McCuan 1985).

This approach highlights the importance of ensuring that the interface between the formal system and the informal network exists and is maintained. It is important that providing support to the care giver be viewed as a legitimate goal of the formal care system and as an appropriate objective in the care plan for the client (and his/her informal network). If assessment and care planning by the formal system incorporates determining what the client can do for him/herself and what the members of the informal network can realistically be expected to undertake, then the care plan should also include the means to support both the client and the care provider.

In order to assure that this balance of formal services and informal support is maintained, it is essential that services be co-ordinated by a responsible member of the formal system. That is, a case co-ordinator (often inappropriately referred to as a case manager; see Havens 1986) who undertakes assessments and reassessments, care planning, and the co-ordination of services either in the client's home or surrounding institutional admission or placement and discharge. In the United Kingdom and the Netherlands this function is assigned to the General Practitioners, though performed by Health Visitors. In Sweden it is assigned to Public Health Nurses. In Norway and Finland it is assigned directly to Health Visitors, who may or may not be nurses. All of these jurisdictions base co-ordination on a system of geographic catchment areas. The Social/Health Maintenance Organization (SHMO) in the United States provides another service co-ordination model based on subscribers rather than geographic areas.

Case co-ordination is also the hallmark of the Manitoba model of Continuing Care. Program nurses or social workers are the case co-ordinators for all clients of the program, both for those receiving home care and those being assessed for placement in a long-term care facility. These case co-ordinators undertake assessment/reassessment, care planning and co-ordination of services, and become the mechanism for maintaining the interface between the formal care system and the informal network (Havens 1986; Kane and Kane 1985*b*). This program, with decentralized referral and field services, is centrally funded and vertically integrates all long-term care services. It should be noted that assessments in this program do identify the mechanisms to support the informal network which continues to provide 80 per cent of the case. Further respite care, adult day care, social or intermittent readmissions are seen as legitimate services to provide care to the client and preventive services to the informal care provider(s).

The Role of Women in Health Care and Caring

From the preceding discussion, it is apparent that women account for both the larger proportion of health care consumed and the majority of care giving, both formal and informal. In part, this results from the disproportionate numbers of older women, especially among the very old (Lewis 1985). However, it is also true that women consume health services disproportionate to their numbers. In a recent article Una MacLean (1985) refers to this as a fascinating paradox. She notes that women get sick more often but their survival capacity is greater than men. "In epidemiological terms, women experience higher morbidity but lower mortality" (p. 674).

Women have also been the traditional carers of the child, the disabled, the weak, and the old. As such, with the increasing numbers of older persons and the accompanying increases in morbidity, women will have ever increasing roles in providing care. Again, MacLean's point is important "Both at home, with minimal help, and in institutions women bear this burden. We urgently require epidemiological investigations into the experience of disability and aging, both as it affects patients and all the women who have to cope" (p. 675). It is startling that so little attention has been paid to the feminization of formal care and especially of long-term care. It is not unusual for the visitor to a long-term care facility to decry the absence of men as residents; but very few even notice the absence of men among the staff. It is simply assumed that women provide this formal care along with their informal care-giving roles. It is also true that women predominate within the staff of home care programs, and other programs of the well-elderly population.

Therefore, in looking to the future of health care and aging with limited resources, it is imperative to know what women will do and how they will behave over the next several decades. Will they continue to consume health services disproportionate to their numbers? Will they continue to experience higher morbidity and lower mortality? Will they continue to predominate within the staff of the formal care system? Will they continue to provide the ever increasing amount of required informal care?

There is little evidence from our Manitoba studies (Mossey and Shapiro 1985) or others that consumption patterns will reverse, i.e., producing reductions in health service consumption by women. There is also no hard evidence that morbidity among women is decreasing or mortality is increasing, nor that such changes can be expected in the near future. If the career counselling and curricula materials are any indication, we must also expect that women will continue to dominate as staff in the formal health system. We are less clear about whether they will continue to provide the requisite informal care, as more women work outside the home and choose career patterns which make full-time informal caring less possible.

In a recent presentation Rosenthal noted that women, now, and in the foreseeable future, undertake most of the family intergenerational work "often at considerable social, physical and emotional cost" (1985, p. 2). Almost regardless of familial and societal changes, this cost will continue or increase. Do we want to continue to strain the intergenerational family structure and to burden women without adequate systemic support to their caregiving? Further, we will continue to financially penalize those women who must opt out of employment to provide care? That is, at present these women not only lose current income, but simultaneously they must forego, at least, portions of pensions in the future due to loss of contributions and loss of service years. This "reward" of future impoverishment for care provided to our older and disabled population is totally inconsistent with any sense of equity.

Conclusion

Based on the foregoing and bearing in mind both what Professor Glaser deemed inappropriate to Canada and those elements of the Canadian systems which other jurisdictions emulate as noted by both Glaser and Kane. It seems apparent that there are several changes which can and should be made to the systems. Certain of these changes are capable of being implemented in the near future and others will require a longer time frame for action. The assumptions of an aging population, of limited resources, of universal access to health care, and of equitable distribution of benefits have been taken as essential to the strategies suggested below.

In the short range, it will be necessary to: 1) provide services in the face of reduced family size and aging of the informal support network over the next 15 years; 2) reform the pension system to preclude penalizing those women who opt out of employment to provide care to family members; 3) provide services from the formal system to support informal care givers; 4) reorient health services education to consider care as being as legitimate as cure; 5) design training appropriate to the distribution of professional roles and reduce training programs in those fields (such as medicine) which are currently oversupplied; 6) emphasize the training of men in all health care fields; 7) initiate adequate epidemiological and behavioural research on women, and especially older women; and 8) introduce reforms based on analyses of the costs of health service utilization which distinguish between the costs of dying and the costs of aging (see Roos et al. 1986), and among the costs of prevention, cure and care in an aging population.

Over a longer time frame, it should be desirable to: 1) expand the community based vertical integration of a Manitoba-type model of Continuing Care to include control of acute-care facilities (including closures or redesignation as chronic or long-term care units) which may, in part, follow the SHMO model from the United States; 2) initiate organized representation of consumers in a manner patterned after the European Sickness Funds; 3) develop and enhance lifestyle preventive health programs particularly those targetted to middle-aged and older women; 4) modify the health system to respond to the results from the current debate over the elongation or compression of morbidity and disability accompanying life expectancy increases (Fries 1980; Manton 1982); 5) similarly, modify the system to respond to the results of the research on women included in the short-term strategies, above; 6) maintain formal support to and co-ordination of services for the informal network who are largely women; and 7) to encourage greater inclusion of men in these networks. All of these changes can be made and collectively they should assist Canada in enabling our limited health resources to be stretched sufficiently to accommodate Canadian population aging.

Floor Discussion

Question: *These papers have not recognized that the health care sector provides employment for many people.*

Across the Prairies, small hospitals are often the only industry in towns that would otherwise disappear. There is a strong incentive, therefore to maintain this industry. Moreover, cutbacks are strongly resisted by the élite, who would like to see their children become doctors. Could the speakers comment on these points?

Answer: For many centuries health care in Europe was supplied by the Catholic church. Hospitals used to provide the poor with subsistence-type employment. Today, only a small fraction of the unemployed could be employed in health care. As late as the 1950s, European hospitals were understaffed, and hospital personnel worked long hours for low pay. That situation has since changed, as hospital personnel became unionized and hospitals could no longer attract staff unless management agreed to eight-hour days, five-day weeks, no split shifts, and standard wage rates.

Europe is still not as overstaffed as the United States. In New York, for example, around 12 per cent of the work force is employed in health industries, while in many smaller towns health care services are the biggest employers. The big shock in the United States has been the cutback in workers. Several hospital unions have gone on strike over this issue and have lost. Hospitals now have a freer hand in cutting employment but are reluctant to go that route. The pressure to cut costs comes from the federal government, and resistance to cuts comes from local governments, local hospitals, and local health care workers. Hospitals, like schools, would be ill-served, however, if their primary function was employment creation.

But not all employment in the health care industry is tied to care. The United States has become the major innovator in health care equipment and is today the world's biggest exporter of electronic health care equipment.

The second part of the question has to do with the "doctor glut." In the United States we are seeing an interesting phenomenon in terms of the "dental glut." The shrinking market for new dentists logically should lead to a shrinking market for training dentists. Instead, we are seeing a strong attempt to recruit more dentistry students by cutting tuition fees. This phenomenon needs watching with respect to physician training as well. In fact, in Canada, it creates a conflict between the two major ministries of government: education and health. One problem occurs when the Ministry of Education does not provide enough space for the training of health care students; another occurs when the Ministry of Health cannot meet the income expectations of their graduates. In the end, the error in planning somehow becomes the fault of the consumer.

Question: *I was intrigued by Bob Kane's reference to typing long-term care more effectively to the acute-care system. In terms of international comparisons, what principles or lessons could be helpful in this regard?*

Answer: Some of the better linkage models are in Great Britain, where there is a social sponsorhisp for many of the long-term care activities and a medical sponsorship for the geriatric and hospital-based activities. The system does not work uniformly well, however, in that the social-work side tends to be taken over by the medical side. Consequently, one has to choose examples very carefully.

Every European country is struggling to co-ordinate the actue-care hospital with the extended-care hospital, the nursing home, the home care program, and other home help agencies. One major problem is the fragmentation of financing: a small portion comes from the sickness funds; some, from the community; some, from local government budgets; some, from charitable associations; and a good deal from the patient. All of these countries are beginning to realize that this is a major problem.

Another problem is that these changes are taking place during a time of recession and high unemployment. Great difficulties are created by the fact that, in country after country, health insurance is based on payroll taxes, and while resources are down, health care costs are going up. Canada does not have that problem because unemployment does not impact immediately upon social security funding.

During the last few years countries have begun to share insights about health care financing. There are many experiences to look at in Europe, but a lot of Europeans would be interested in Canada's experience too.

Question: *Couldn't the medical shools enhance their curriculum to address the problem of linkage in long-term care, and couldn't the schools of nursing place a lot more emphasis on care for the elderly?*

Answer: The quest to retrain physiscians ought to begin with a course called "Humility 101." The first question is whether the new system should be built around the medical system or vice versa. There is a preference for a more social model that would bring in the physicians as contributing members.

Physicians should be trained according to the methods of clinical models. There is nothing that teaches a medical student as vividly as bringing in a patient with pneumococcal pneumonia, giving him a shot of penicillin, and seeing him restored to health. We need to develop similar models to show that a better system of care for the elderly can make a big difference in their functional status and their autonomy. It isn't simply a matter of gerontologizing the curriculum – a "quick fix" that has been sought in the United States, as well as in Canada – but it requires the development of new models of care that can be used as a training base. Training sites will have to be multidisciplinary in rehabilitating the elderly.

There have been periods in history when the medical curriculum went through a great experimental transformation, attracted a lot of attention, and then became generalized. Examples can be found in the great interest in surgery shown by the French medical schools around the 1830s and in the transformation of U.S. medical education at Johns Hopkins in the late nineteenth century. Recently there have been attempts to modify the U.S. curriculum. One of the best examples is found at the Mount Sinai Medical Center in New York, where every single student must rotate through a nursing home as part of his medical education. Maybe that will transform attitudes; maybe it won't. The reward in medical education still lies in the fields of scientific medicine and hi-tech applications.

But here in Canada you may not be the same prisoner of the hi-tech orientation, and perhaps you can develop a new model. Why don't you come up with a proposal to develop an entirely new form of education in health, medicinal, nursing, and social services that might be implanted in some major medical educational centre in one of the provinces? You could certainly attract a lot of attention and exercise a lot of influence.

Question: *Since we have limited resources, we want to avoid adding new-type care facilities, as that would mean taking something away from the existing acute-care system. In Ontario we found our attempts were stymied by a lack of support from the public, who still want acute-care facilities. What role and necessity do you see for public education?*

Answer: It is certainly true that innovation does not come out of the blue. What you need is a salesman who can make society aware of its needs. For example, Robert Butler has become a very important public performer, both on television and in conferences to convince U.S. medicine that it should adopt geriatrics. You'll have to do that for innovations in Canada.

In the United States we have seen more politically powerful groups develop among the elderly, which now number over 30 million. For a long time those groups refused to look at the dependent elderly – the victims of long-term care. Now there is a shift, and they are looking not only at acute care but also at long-term care. Part of the strategy should be not only to develop good salespersons but also to educate those political constituencies who will form the nucleus of pressure groups. Indeed, in Ontario you have a very active group of citizens concerned about nursing homes, and they have made some profound changes by speaking with a voice that is very difficult to rebut, not only factually but politically.

Shutting down part of the health care system to conserve resources may cause problems. In Australia, for example, they can't keep nurses in their system; in fact, they are now offering nurses from England virtually free trips, on condition that they'll work in the health care system for two years. The Australian nurses are leaving because they are paid less than the average North American secretary. The decline in the number of nurses has resulted in a drop in the number of available hospital beds, in line with a policy decision taken earlier by the Australian government. This shows that we are dealing with a dynamic system, where tampering with one area will have an effect on others. The question is whether it is possible to retain some parts of the system without destroying it altogether.

Question: *We are spending about 65 per cent of our health care expenditures in the last six months of our lives. Much of our investment, therefore, is being directed at the quantity, not quality, of life. Could you tell us if Europeans are also discussing the question of quality versus quantity of life?*

Answer: That is a very complex issue. This debate – or dispute – between providers of care and finance officers is now under way in several European countries, particularly in the Netherlands. The story is different in each country, and in some the debate hasn't even begun.

We really need to think carefully about what we mean by quality of care. We are talking about institutionally delivered care over a long period of time, in which the way one lives may be as important as whether one lives. Unfortunately, we do not have a great deal of good information on what people really value. In the United States the hospice movement began as a counter-establishment movement that advocated better treatment of the terminally ill. As it turned out, it didn't improve the quality of care, and it didn't save any money.

3 Demand and Supply of Health Care Services

Alan Walker

The purpose of this paper is to examine the implications for the health and social services of Canada's aging population and draw on recent social planning experience in Britain in order to propose some policy options. The kind invitation from the Economic Council of Canada to comment, from the distant vantage point of Britain, on the care of elderly people in Canada, was accepted with a mixture of gratitude and hesitation. Canada has some of the best known and most widely respected social gerontologists in the world and they are more in tune with Canada's domestic social policy than an outsider can hope to be. Then there is always the danger that this sort of exercise will be criticized for being, at best, presumptuous and, in view of the historical relationship between our two countries, at worst, imperialist. In fact, the intention behind the following commentary is definitely not to present a series of British policies ready packaged for Canadian consumption, but rather to encourage an *exchange* of information on aging and social policy in order to assist the formulation of policies in *both* countries.

There appears to be a good case for an exchange of information on the care of elderly people between Britain and Canada. Although widely divergent in physical size and structure, our two countries have evolved health and social services which are similar in important respects. It is partly as a result of the impact of these services, that they are both facing steadily aging populations over the next four or five decades, though the pace of change in Canada will be much more rapid than in Britain, which experienced the most dramatic increase in the numbers of its elderly people over the *previous* 50 years. In common with other western industrial societies, both are searching for more cost-effective ways of delivering health and social services. Both have a mixed economy of public, private, and voluntary services. Britain suffers from the same internal parochialism as Canada apparently does (Schwenger 1985, p. 4), though in the former case this is coupled with the post-imperial and entirely misguided belief that its welfare institutions are the best in the world. Co-operative and, hopefully, collaborative research would help us to overcome these common policy problems and institutional deficiencies. Of course, policy options must be evaluated within the context of the country in which they are intended to operate. But this should not preclude the use of research from other countries in order to help to learn from their successes and failures and, thereby, establish the broad parameters of policy responses to aging.

There are signs that the remarkable change in the structure of the Canadian population that will occur over the next 40 years – the virtual doubling of the proportion of people aged 65 and over – is being foreshadowed by a very similar set of public debates to those that began in Britain some 30 years ago and which have reappeared periodically ever since. The same issue that has recently rekindled official concern about demographic change in Britain, pressure on public sector resources and the consequent emergence of the cost effectiveness imperative, has compounded the problems confronting Canadian policy makers trying to frame responses to population aging by increasing the urgency with which such policies are being sought and adding the temptation to opt for quick solutions rather than carefully planned and evaluated ones. It is to the two sides of this policy coin – the demand for and supply of health and social services – that the remainder of this paper is addressed: What are the needs of an aging population and how might they be met? The answer to this question is directed primarily at social *care* rather than *treatment* because this reflects the main needs of the majority of the most severely disabled, and because it is the provision of long-term care that will come under greatest pressure as a result of population aging and increased life expectancy in Canada (Woods Gordon 1984, p. iv).

The Growth in Need and the Demand for Services

One of the major sources of increased demand for health and social services is the growth in need created by the expansion in the numbers of elderly and especially very elderly people. In Britain declining mortality, among all age groups, coupled with a long-term decline in fertility, reducing the proportion of children in the population to an all-time low, has produced this unique late-twentieth century phenomenon of an aging population (Ermisch 1983, p. 11). Similar changes are expected to take place in Canada over the next 40 years and beyond, as the postwar baby boomers approach retirement around 2010 and advanced old age in 2030 (the implications of this change are discussed by Professor Manton).

In 1981, 15 per cent of the population in Britain were aged 65 and over compared with 9.7 per cent of Canadians. But Canada is expected to catch up and overtake Britain in a relatively short space of time. By 2021, the proportions are expected to be 17.2 per cent in Britain and, taking the Woods Gordon (1984) medium-range population projection, 18.2 per cent in Canada. In both countries the main increase over this period will take place among the older age group of 75 and over, but again the pace of change in Canada is projected to be very rapid indeed: an increase among those aged 65 to 74 of 130 per cent and among those aged 75 and over of 158 per cent, compared with 9 and 38 per cent in Britain. (In contrast, the increase in the proportion of people in Britain aged 65 to 74 and over the *previous* 50 years was 91 and 232 per cent for those aged 75 and over; see Wicks 1982; Walker 1985.)

It is not, then, the scale of change in the age structure of Canada's population that is remarkable, but rather the *pace* of change. Indeed, the age structure of the Canadian population is currently out of step with the majority of other western industrial societies. The average proportion of the population of the 10 European Economic Community countries aged 65 and over is 14.2 per cent (the lowest is Ireland with 10.6 per cent and the highest is West Germany with 15.1 per cent; see Eurostat 1984, pp. 76-77). This is obviously not due to any lack of success on the part of Canada in extending life expectancy: it has one of the highest levels of life expectancy, for both men and women at age 60, among OECD countries, while Britain has one of the lowest (OECD 1985, p. 131). The relatively low proportion of Canada's population aged 65 and over results primarily from the comparatively high fertility rates in the 1950s and early 1960s, which were shared with the United States and Australia, whereas in Britain and other West European countries the boom came later, was shorter and the fertility rates were much lower (Ermisch 1983, p. 23).

Avoiding Demographic Despair

While most contemporary official and popular accounts of aging and social policy are usually prefaced with this sort of description of demographic trends, the increasing tendency is for them to use such statistics to denigrate old age and indulge in what might be termed an alarmist demography of despair. It is important, therefore, in assessing the potential significance of demographic change to help to avoid this danger by emphasizing five caveats.

First, there is the danger of exaggerating the impact of aging and creating the impression of being swamped or taken over by multiplying hoards of frail elderly people demanding health and social services. For example, in Britain, descriptions such as "the growing burden of dependency," "social disaster," "flood," and "rising tide" have been used recently in official and popular accounts (U.K. Health Advisory Service 1983). The caricature of old age created by such language – which is at best restricted and at worst downright degrading – has its origins more in social and political institutions, particularly the labour market, than in demographic facts. We are encouraged to believe that the social problem of dependency exists just because the number of people in a particular age group are increasing, by the simple but erroneous translation of demographic projections into social realities such as dependency. But dependency is a socially rather than a biologically or demographically determined status. It is primarily a product of a particular social division of labour and structure of inequality rather than a natural concomitant of the aging process. So, the description of aging by means of population statistics has largely substituted for social and economic analysis of the changing meaning and experience of old age. As a result, the extent to which we have *created* a dependent status in old age has been obscured. This is not to say that people do not grow old and suffer from illnesses and disabilities some of which might entail dependency, but rather, what we regard as old age is of our own manufacture and not a function of demography or the biological aging process. This means, in turn, that policies to prevent disability and dependency are not given priority in relation to essentially reactive spending on health and social services (for a full account see Walker 1980*a*, 1981*a*, 1983; Townsend 1981*a*).

The practical implication of this sort of structural analysis is that since age and, particularly, dependency are social constructions, they can be altered, as they have been in the past, through social and economic policies such as those affecting the age of retirement and the distribution of resources between different age groups and social classes. This approach also helps us to recognize that the demography of despair serves the vested interests of some politicians and officials (Walker 1982). In fact, there is a wide range of powerful groups and interests in the health and social services that may, often unwittingly, encourage the myth that old age and dependency and need are synonymous. Some staff of home care services and residential and nursing homes alike, trade unions in the health and social services, service managers, provincial politicians, the medical and nursing professions, officials of Health and Welfare Canada, and ministers have all no doubt stressed the worrying implications of the rising numbers of elderly people in their wholly honourable pursuit of better services, conditions of service or more resources for the health and social services. But in pressing their case they may have helped to spread and legitimize an inaccurate picture of elderly people and the true origins and nature of their needs. There is a constant danger, therefore, that policy will be formulated in a climate of alarmist speculation, following the path of least resistance, rather than on the basis of a careful analysis of actual needs among the elderly. The demography of despair can be avoided by careful research and concerted social planning.

Second, to conceive of increases in the numbers of elderly people as a threat or a burden is paradoxically, as Titmuss (1981, p. 56) pointed out, to undervalue the social progress made by advanced industrial societies, such as Britain and Canada. In particular the enormous achievements of public welfare, in putting an end to many of the causes of premature death among earlier generations, are minimized. Once this path is chosen it is difficult to avoid the trap of regarding extensions of the life span as a heavily qualified blessing, if not a retrograde step, rather than a source of national pride. The Economic Council itself came close to this trap when it pointed out that "health services tend to become the victims of their own success" (ECC 1982, p. 64).

Third, it must be remembered that increases in the population in need do not necessarily result in increased resources being devoted to meet that need. There is not a perfectly competitive market for health and social services in Canada. As in Britain the "market" is dominated by the state and, therefore, supply is primarily determined by what the government decides to spend. It is certainly the case in Britain that expenditure on the health and social services has not been particularly sensitive to increases in the need for care (Ermisch 1983, p. 283). Thus, whatever pressures derive from rising numbers of elderly people in the future, the deciding factors in the allocation of public resources to health and social care will be political. It is an interesting matter for speculation, beyond the scope of this paper, whether or not Canadian and British elders will join their counterparts in the United States in becoming a potent political force in the battle of resources.

Following on from this, fourthly, there is the fact that demographic changes are the leading one among a whole series of factors – including voting preferences, political advertising, technological advances, financing and expenditure planning arrangements, inflation and the relative price effect and professional judgments – contributing to increased demands for health and social services (Judge 1982).

Fifth, there is always a question concerning the amount of reliance that can be placed on population projections. Of all forms of social prediction, those based on demographic data have the worst record of success (Abrams 1978*a*, p. 5).

Age, Disability and Health

Bearing in mind these cautions what can be said with confidence about the health needs of elderly people? The health status of the elderly differs from that of the young in respect of both the occurrence and type of disease and disability (Hodkinson 1975). As age increases the incidence of ill-health and disability increases and the consumption of health and social services increases (Angus 1985, p. 12). This is *not* to say that age in itself is the cause of need and, in turn, the demand for health and social services. In fact, the relationship between age and need is not so simple. Many 80-year olds remain active and fiercely independent while others require some, usually minimal, physical help and support. But as age increases beyond about 50 there is a marked rise in the incidence of disability – particularly at the lower levels of severity – and ill-health in successively older age groups. There is a very rapid increase in severe incapacity beyond the age of 70 (Townsend 1979, p. 708).

The increasing incidence of disability and morbidity in old age can be illustrated with reference to Britain. The average number of days of acute illness for those aged 65 and over in 1981 was 35 for men and 47 for women, while the average for all ages was 19 for men and 24 for women. For chronic illness the figures for elderly men and women were 54 and 63 per cent compared with an average of 28 per cent for all men and 30 per cent of all women. The proportion of elderly people living in private households suffering severe incapacity is more than three times greater among those aged 75 and over than among those aged 65-74 (18 per cent compared with 5 per cent) while the proportion of the former experiencing no incapacity is less than half that of the latter (27 per cent versus 60 per cent). Table 3-1 shows the incidence of disability among different age groups living in private households.

Table 3-1

Percentage of Non-Institutionalized Elderly People with Different Degrees of Incapacity

	Age		
	65-74	75 and over	All 65 and over
Degree of incapacity:			
None	60.2	27.4	49.2
Slight	19.8	21.6	20.4
Moderate	14.7	32.8	20.8
Severe	5.3	18.2	9.6
Total	100.0	100.0	100.0

SOURCE A. Walker, *The Care Gap* (London: Local Government Information Unit, 1985), p. 7.

All of the major causes of ill-health and disability in old age – arthritis, cardiac and pulmonary conditions, blindness and failing sight, deafness, circulatory conditions – are more likely to occur among successively older age groups and often do so concurrently. Similarly with mental deterioration: women aged 80 and over are more than 40 times as likely as those aged 65-69 to suffer from an organic brain syndrome, very elderly men are twice as likely as their younger counterparts to experience organic mental impairment (Royal College of Physicians Committee on Geriatrics 1981, p. 8).

Statistics on the incidence of ill-health and disability among elderly people demonstrate, paradoxically, the most important feature of health status in old age: the vast majority are *not* in need of care and are able to look after themselves without help from either relatives of the health and social services. As Table 3-1 shows, more than half of over-65s have no disabilities and a further one-fifth have only slight ones. Even among those aged 75 and over nearly half experience none or only slight disablement. So the popular stereotype of elderly people as disabled and dependent is grossly misleading. This fact is often overlooked in official discussions about health and social service provision for the elderly: the majority do not need or use these services or do so infrequently and, therefore, *the bulk of care in old age is self-care*. Although, only a rough indicator of actual health need, elderly people's assessment of their own state of health confirms the conclusion of more objective measures. Thus, more than three out of four elderly people living in the community in Britain regard their health as being "good in general." This includes some three-fifths of those aged 85 and over (Hunt 1978, p. 73).

A second major way in which the health status of elderly people differs from younger people is in the extent of the influence of social and environmental factors. Elderly people and particularly women in advanced old age suffer severe social deprivation in relation to younger adults. As a result of low lifelong social status and the impact of retirement in depressing income and status, a significant proportion of elderly people are more likely than younger adults to experience poverty, low incomes, poor diet, and housing and environmental deprivation. The exact impact of deprivation on health status has not been assessed (Walker 1981*a*). However, coronary heart disease and many cancers are known to have important environmental causes (see, for example, Townsend and Davidson 1982). Impairment and disability are closely related to occupational class (Walker 1980*b*). Other health problems such as hypothermia, incontinence, and depression have been linked to some extent with social causes, such as inadequate heating and housing, and feelings of rejection by society (Tinker 1983, p. 61). Social and environmental factors are equally important in the *demands* that elderly people place on the health and social services. So, for example, a critical issue in determining admission to and length of stay in residential and nursing homes and hospitals is the lack of suitable accommodation and care in the community (a point I return to below).

The important influence of social and environmental factors in determining *both* health status and demand for health and social services reminds us not only that a narrow focus on acute illness and organically determined diseases provides a very restricted basis for policy making, but also that health does not deteriorate suddenly, for no apparent reason, after the age of 65. If we are concerned about the impact of ill-health and disability in old age then we must examine the uses made of the human body, and the demands placed on it, over the whole lifecycle and the different environments in which human beings at various points in their lifetime have been placed. Chief among these lifecycle effects, of course, is the social division of labour: "In the collective effort of social production, some workers' bodies wear out first" (Townsend and Davidson 1982, p. 133).

The Need for Care and the Demand for Services

Statistics on the incidence of ill-health and disability do not tell us much about the precise need for care among elderly people. Some indication of need can be derived from the assessment of functional capacity. Although the majority of elderly people do not require care there is a significant proportion who do need some form of regular treatment, help, tending or care. This need is concentrated on the severely disabled elderly and, therefore, the first step in developing a coherent health and social services policy for the elderly is "to establish the incidence of different degrees of disablement" (Townsend 1981*b*, p. 94). Need is also concentrated on the very elderly primarily because of the increased incidence of severe disability in advanced old age. For example, the proportion of elderly people in Britain who are unable to go out-of-doors and walk down the road unaided increases by tenfold between the 65 and 69, and the 85 and over age groups. The proportion of those aged 85 and over who are unable to bath, shower or wash all over alone is seven times higher than that for those aged 65 and 69 (U.K. Office of Population Censuses and Surveys 1981). Not surprisingly, therefore, use of health and social services is concentrated on the very elderly and very disabled. They are more likely than younger elderly people to receive both medical and nursing care in the community and long-stay care in hospitals, nursing homes, and residential homes. Furthermore, as Roos and Shapiro (discussed further on in this chapter) show, high usage of health services is associated particularly with the period just before death. There is also evidence, from the United States and Canada, that as life expectancy increases so does the period of disability experienced by elderly people (discussed further on in this chapter by Professor Manton). The result, however, is not an increase in acute-care costs per capita but, rather, a significant increase in the intensity of service inputs as functional limitation increases and a rise in long-term care expenditure.

The need for treatment and especially care with various self-care, household management and mobility activities has grown along with the aging of the population and will continue to do so. In Britain, for example, there will be an extra 21 people per day requiring help with bathing or washing all over up to the year 2021. If the same incidence of need occurred in Canada, which is most unlikely, the equivalent rate of increase would be 27 people per day requiring help with bathing or washing all over. But again, whether or not objectively or normatively assessed need will be translated into expressed need, or demand, depends on a number of intervening social factors. It is the outcome of the interplay of these that determines the level of demand for health and social services rather than medical condition. Three of the main factors are considered here: the supply of informal, and particularly family, care; social isolation; and the social policy response to disablement.

Family Care of Elderly People

In the first place there is the availability of informal care. Despite the fact that elderly people are the largest users of health and social services, the vast bulk of care is not provided by these formal services but by informal carers, particularly family members. In turn, family care is a euphemism for care by female kin (Land 1978; Finch and Groves [eds.], 1983; Walker 1981*b*). Women carry out most of the physical help, nursing assistance, and practical support that caring tasks consist of. Regardless of whether the elderly person suffers from a short-term illness or long-term disability, it is female kin who are the front-line primary carers. As well as doing most of the unpaid labour, women bear the main burden of guilt and worry that the other side of the caring relationship, love or affection, usually entails (Graham 1983). A very detailed British study of a small group of families caring for severely disabled elderly relatives found that the average time spent on care activities on weekdays was 3 hours 24 minutes, of which 3 hours 11 minutes was attributed to wives and 13 minutes to husbands (Nissel and Bonnerjea 1982, p. 21). The critical importance of the family, and female kin in particular, as the mainstay of social care and support has been confirmed by a long series of studies in the United States and Canada as well as in Britain (see, for example, Shanas et al. 1968; Shanas 1979; Brody 1981; Block 1985; Shapiro 1985; Qureshi and Walker 1986).

Thus, the future supply of care for elderly people and, in turn, the demand for formal services, is primarily a question of how far women will be prepared to continue shouldering the main responsibility for providing care.

Certainly, there are powerful normative, ideological, and marital pressures on women, and especially daughters, to care for elderly relatives. Recent research in Britain – which examined the caring relationship from the perspective of both elderly people and their principal carers – has confirmed the continuing potence of the normative structure underlying the hypothetical decision-making process which determines which relatives from an available pool will provide care (Qureshi and Walker 1986). It is possible to predict, with a high degree of accuracy, the outcome of decisions about which relatives will care, even within large close-knit kinship structures. One of the strongest influences on the social "selection" of carers is that female relatives are preferred to male relatives. The majority of carers themselves believe that they are the right person to provide care and that care for elderly people is women's work. The strength of these normative assumptions and pressures in Canadian society will have a direct bearing not only on the demand for formal care but will also influence the extent to which informal, non-family care can be introduced. Thus, preference for relatives as against non-relatives by *both* elderly people and their relatives may set limits on the involvement of friends, neighbours, and volunteers in the care of elderly people.

The Supply of Informal Care

Against the demonstrably powerful influence of norms concerning the distribution of caring functions – the exact influence of which must be tested in Canada – there are several factors which might come to have an increasing impact on the availability of family care.

As the proportion of the population in advanced old age continues to grow, it is likely that more and more elderly people will survive their relatives. In addition, the pool of potential family carers will contract as the results of declining fertility in Canada in the 1960s and 1970s manifest themselves towards the end of the century. In Britain, the ratio of potential family carers per person aged 75 and over has declined steadily over the course of this century (Eversley 1982). The result of the decline in fertility during the 1920s and low fertility in the 1930s is that the generations who are now aged 75 have fewer children than any previous generation in Britain.

Increasing longevity means that the aged carer is becoming a more and more common phenomenon. While the existence of elderly carers is not, in itself, a cause for concern, it is likely that advanced old-age carers will be less able than younger people to withstand the strains of caring and, therefore, will be unable to provide their elderly relatives with the level of support they need to remain in the community.

Family breakdown too is likely to have some impact on the future availability of carers. It is not possible to predict the consequences of divorce and family reconstruction on the supply of family care, but Parker's (1981, p. 21) question about who will look after the dependent step-grandmothers and step-grandfathers of the next century must be faced by policy makers sooner or later.

Economic changes may affect the supply of care, if not the numbers available to provide care, by restricting the ability and propensity of family members to help elderly relatives. It is sometimes suggested that the growth of unemployment might have a beneficial spin-off in freeing more men to take a greater share of caring tasks. On the face of it this is an appealing argument, entailing benefits for elderly people, female carers, and unemployed men. But it contradicts the wealth of research evidence on the debilitating, isolating, and psychologically damaging effects of unemployment (see, for example, Hakim 1982). What little evidence there is about the effect of unemployment on the propensity to care suggests that unemployed men are *less* likely than those in work to provide care to elderly relatives or to support the caring activities of their wives (Qureshi and Walker 1986).

It is probable too that the existence of family poverty, with all its attendant anxieties, both financial and mental, does not contribute to the willingness of family members to care for elderly relatives. There is very little information on the relationship between economic status, income levels, and the supply of informal care, a deficiency that might become apparent to policy makers in the near future.

The evolving relationship between the labour market, especially the growth of part-time employment, and informal care is another important focus for attention. It is sometimes suggested that an increase in the involvement of married women in the labour market would reduce their commitment to care. There is no evidence from Britain – where over half of married women aged 25 to 35 and two-thirds of those aged 35 to 54 are economically active – that this has happened. On the contrary, what is remarkable is the extraordinary lengths that many married women go to, often sustaining three separate roles at great physical and mental cost to themselves, in order to care for elderly relatives in the community.

The Gender Division in Care

This brings us to what is perhaps the greatest long-term challenge to the structure of norms and values on which the present pattern of informal care is based: the growing opposition on the part of women to sex-based inequality, and the questions it raises about the unequal division of domestic labour, including the provision of informal care. Some feminists and female carers are directly confronting questions concerning the justice and fairness of sexist forms of care and the possibility of alternative approaches which do not exploit the low status of women (Wilson 1982; Finch and Groves [eds.], 1983), questions which will emerge in a more personal form in many families caring for elderly relatives in the future. Although opposition to sex-based inequalities is unlikely under its own steam to have a major impact on the provision of informal care in the medium term, planning for the longer term is essential if we are to respond to the effects of changes in the roles of women which may challenge their normative designation as carers.

While the effects of those developments are uncertain, even in the long term, the feminist critique of care does emphasize the important question: *should* women be the primary source of care? Policy makers might prefer to approach this question from a different perspective: what are the implications of a continuation of the present unequal sexual division in informal care?

Caring entails a number of costs – financial, social, psychological, and physical (Nissel and Bonnerjea 1982; Walker [ed.], 1982*a*) – which are not only borne predominantly by women, but because of this, they are forced to give up caring prematurely. For example, Isaacs and his colleagues (1972) found:

> The factors which made the burden of caring for an ill, old person overwhelming were, above all, the personality of the patient, the distortion of personality and behaviour caused by mental illness, and to a lesser extent the physical burden of providing night-and-day nursing care for the helpless.

If carers do give up full-time care it is usually because they are no longer able to bear the huge emotional and psychological costs or because they have been worn out by the sheer physical effort of enduring sleepless nights, illness, and exhaustion from lifting, nursing and taking care of their relatives. It should be a matter of concern to policy makers not only that the breakdown in informal care results in an increased demand for formal services, but also that individual carers should be driven to the breaking point before these services are made available on a casualty basis.

Social Isolation

The critical importance of the family in providing care and tending is emphasized, secondly, by the fact that those living alone without nearby relatives are more likely to be receiving formal services. For example, in Britain, those aged 75 and over living alone are nearly three times more likely than those in the same age group living with a spouse to receive home help assistance, and five times as likely to receive meals-on-wheels (Walker 1985, p. 13). The population of old people's homes includes a disproportionately large number of unmarried persons and married persons without children (Townsend 1965, p. 171). Thus, the greater use of health and social services by the very elderly is partly due to increased illness and disability, and partly due to the absence of informal care. Research is required to distinguish the relative importance of these different factors in contributing to demand.

The Social Recognition of Disablement

A third important determinant of demand for formal care is the social response to need in old age. It is a matter of social policy whether or not the extent of disability is recognized and measures taken to alleviate its impact. The tendency in Britain and in most other western industrial societies is to underestimate the extent of disablement among the elderly. This failure takes three main forms (Townsend 1981*b*, p. 97).

There is the lack of provision in social security and taxation to fully recognize the fact that poverty and deprivation are greater among disabled than non-disabled elderly people. Then there is the failure to acknowledge that elderly people with disabilities require higher incomes and more support from the health and social services than non-disabled people. These needs result from the special costs associated with disability; which may be direct and easily identifiable – such as drugs, spectacles, wheelchairs, special diets, large print books and handrails – or indirect and hidden – such as the inability to shop in cut-price supermarkets because of limited mobility and the need for extra heating to offset pain or discomfort. They are partly related to income as well as disablement (Boulet and Henderson 1979, pp. 20 and 59). The point has been expressed neatly by Schwenger (1985, p. 23): "It is a lot healthier to be rich in old age." Finally, there is the tendency to parcel up disability into different categories which diverts attention from the needs which people with disabilities share in common and has the effect of minimizing the extent of the problem. The fragmentation of medicine into different specialties and the practice among voluntary agencies to identify and try to serve the needs of people with particular types of disability, tend to obscure the degree to which, in old age especially, physical and mental limitations are more often generalized than confined to particular conditions. The degree of restriction – or the extent to which people are prevented from leading activities common for those of their age – is what becomes important. The compartmentalisation of specialties and services represents a barrier to the construction of a coherent policy to meet need in old age.

This outline of some of the social determinants of demand for formal services underlines the fact that need and demand cannot be neatly equated in the field of social care. Of course, the exact impact of the various factors must be evaluated in the Canadian context, but it is likely that the propensity of Canadian families to provide care and support to elderly relatives will continue to exert a more dominant influence over potential demand for health and social services than changes in morbidity associated with aging. If just 5 per cent of families refused to provide care, tending, or nursing assistance to elderly people in need, the formal services would be swamped. Thus, the extent to which formal services are geared to the needs of the informal sector will have a crucial bearing on the willingness and ability of the latter to provide care. Moreover, demand for health and social services is determined, in part, by the nature, availability, and accessibility of those services – which needs are met and which needs are unmet – and it is to a consideration of the supply of health and social services that we now turn.

Meeting the Needs of the Elderly

It is certain that the prevalence of disability and chronic ill-health will increase as life expectancy increases and the population ages. Whether or not this is regarded by policy makers as a crisis or a challenge depends on their willingness to regard population aging positively as a sign of social progress and to plan responses accordingly. This will depend, to a considerable extent, not on the view the government takes of aging as such, but on the predominant economic and social policies it pursues and the proportion of national resources it is prepared to allocate to the elderly. Happily, these macro-economic issues are beyond the scope of this paper. Assuming then that Canada will choose to respond to the challenge of aging in a positive way, what options are there for ensuring effective care within limited resources? On the basis of experience in Britain and other West European countries in recent years, three main policy responses to aging are likely to be discussed with mounting urgency within the health and social services field: an increased emphasis on community-based forms of care, a drive for greater efficiency in the delivery of public services, and the privatization of public services. Each will be considered in turn, though the first option is discussed at greater length than the others because there is more research evidence to draw on, and because it offers the main prospect for reducing health care costs (Woods Gordon 1984). The role of prevention, particularly the prevention of disability and health promotion – though, initially at least, small in resource terms, extremely important in respect of quality of life – is discussed by Kenneth Manton, Madeleine Blanchet, Donald Wigle, and Carol Buck.

Community Care

"Community care" has been the policy of British governments of both of the main political parties since the Second World War (Walker [ed.], 1982*a*). In recent years, the ideological shift to the right and official antagonism towards public spending on the welfare state has led to a search for ways to increase the caring capacity of the community. Community care of "home care" and "home support" has been pursued over recent years in Canada. But the infrastructure of social and housing services appears to be less well developed than in Britain. Moreover, the hospital sector, and therefore the medical profession, exerts a more powerful influence over social care than it does in Britain, where there is a more rigid distinction between medical *treatment* and social *care*. In general, if formal services are institutionalized and medicalized more of the population receive care in institutions and they tend to be extremely costly. Thus, around 5 per cent of those aged 65 and over are resident in hospitals and other institutions in Britain compared with 9.5 per cent in Canada. The proportions for those aged 85 and over are 21 per cent in Britain and 31 per cent in Canada (Angus 1985, p. 22; Schwenger 1985, p. 22). The implications of this institutional bias for the demand for health resources are obvious. Between 1970 and 1982 spending on all institutions in Canada rose faster than total health expenditure (408 per cent compared with 386 per cent), while spending on homes for special care provided the main source of growth in health costs (675 per cent).

The Canadian response to aging has been significantly more institutionally based than Britain's. In fact, Canada has a higher percentage of inpatient care and a higher hospital admission rate than Britain over the whole health care system (OECD 1985, p. 15). This is at a time when the proportion of elderly people in the population is well below that in Britain and, therefore, the gap can be expected to widen further as the Canadian population ages. Already Canada devotes appreciably more of its national resources to health care than Britain does: in 1982 total expenditure on health comprised 8.2 per cent of GDP in Canada and 5.9 per cent in Britain. While the Canadian health and social services are geared primarily to medical and institutional responses to need, the relatively high level of life expectancy in Canada and the rapid aging of its population over the next four or five decades are bound to contribute to substantial increases in costs.

What is the potential for shifting the balance of care away from institutions and towards the community? What dangers should be avoided in developing a community care strategy?

In the first place it is essential to have a clear understanding of the meaning and purpose of community care and to carefully plan its implementation. In Britain, the precise meaning of the concept has varied considerably in practice and has never been defined in statute (Abrams 1978*b*; Walker [ed.], 1982*a*). Indeed, the history of community care policy provides a powerful lesson for policy makers and planners of the dangers, to paraphrase Titmuss (1981), of employing idealistic terms to describe aspects of public policy. The concept is so value-laden and appealing, and has been used so often in political rhetoric that the impression has been created that it actually exists. In fact, as we have seen, community care means family care and, in turn, care by female kin. In public policy it has until recently, been taken to mean care *in* the community: the supply of formal domiciliary services to enable elderly people to remain in their own homes for as long as possible. These services include home helps, meals-on-wheels, sheltered housing, community nursing, home visits by general practitioners, and personal aids and adaptations to housing. But, in practice, this goal has never been fully realized, partly because it has not been the subject of concerted planning, and partly because sufficient resources have never been allocated to ensure its achievement. As a result, although there are community care facilities provided by all local authorities in Britain, there are wide variations between them in scope and coverage, there is a substantial shortfall between service provision and official definitions of service need (for example, the official target for home helps in the mid-1970s was 12 per 1,000 population 65 and over and the current rate of provision is 6 per 1,000), and this "care gap" is getting larger, and institutional care continues to dominate both national health and local authority social services budgets (Walker 1985). These deficiencies cannot be overcomed or avoided unless there is a major political commitment to the development of community care services.

Following on from this, secondly, the limits to community care policy will be set by professional as well as political interests. Roos and Shapiro (discussed further on in this chapter) show, for example, that changes in the propensity of physicians to hospitalize have a greater impact on hospital usage than demographic factors. There are powerful bureaucratic, medical, and nursing interests in the health and social services, as well as commercial ones in the private sector, which tend to favour institutionally-based responses to need. Yet, as we have seen, the main long-term needs of the majority of elderly people are neither medical nor institutional. Moreover, although the current interest in community care derives primarily from financial considerations, the policy originated as a response to the critique of the detrimental impact of institutional care on elderly people (Townsend 1962). There is a long series of research studies demonstrating that significant proportions of patients in hospitals and residents of homes are physically and mentally capable of living more independently in the community with appropriate support, and that for a large number of people admission to an institution rests on social factors, such as the lack of alternative forms of care or suitable housing, rather than physical or mental disability (for a summary of the research, see Townsend 1981*b*). There is some indication too that, once people have been admitted, institutions can increase their dependency (Walker 1982). Coupled with criticisms of institutional care there is the continuing finding of research in Britain that elderly people and their families are extremely reluctant to contemplate admission to a home and do so only as a very last resort (Qureshi and Walker 1986). This suggests that there may be a conflict of interest between some elements in the health and social services and elderly people and their families over the organization of care. A successful community care policy is only likely to materialize if the needs of elderly people and their families are fully represented in the policy-making process.

Thirdly, it is important to recognize the limited ability of the informal sector to meet the rising needs of elderly people for care. As far as the family is concerned, its full potential is already being utilized. There is no evidence of a significant pool of potential family carers. (The major exception, of course, is men, who are not normatively designated as carers, a fact that should attract both research and policy.) This leaves friends and neighbours as the main source of additional informal care. But there are important limitations on the caring roles of neighbours and friends. In practice, they are much less likely than relatives to be involved in personal care and household tasks, being confined instead to "outdoor" jobs such as gardening and shopping (Tinker 1984, pp. 71-73). In addition, friends and neighbours are less willing or able than relatives to do the more arduous tasks (Seyd et al. 1984, p. 90) or to make long-term commitments to care (Wenger 1984, p. 185). This suggests that they cannot be expected to step fully into the shoes of formal or family carers.

For similar reasons – the need for secure, reliable, and durable assistance – the potential of the quasi-formal sector of organized volunteers also requires cautious consideration. There have been a number of important experiments in Britain in collaboration between formal and voluntary services which give cause for some optimism about their wider use in a supportive capacity (Johnson and Challis 1983, p. 111). Working in conjunction with formal services, volunteers can make a modest contribution to filling the gap in the care of the elderly (Power and Kelly 1981). Again the use of volunteers cannot be seen as a substitute for formal services; the latter are required in order to make the most of voluntary help:

> In only a few situations is the voluntary sector an alternative to the statutory sector, either in the sense of offering a choice of services or in the sense of being able to do the work now done by the statutory services. Thus voluntary organizations are not a challenge to the state in the sense of being able to supplant it or carry on in parallel to it (Hatch 1980, p. 148).

Fourthly, there is always a danger that politicians and officials, in their busied searching for alternatives to increasingly costly formal services, will overidealize the informal sector and, consequently, ask too much of it. This perspective reflects what Whittaker and Garbarino ([eds.], 1983) refer to as an "ideological naïvete" whereby some politicians look beyond the potential for shared care between the formal and informal sectors to an ideal of completely non-formal provision. It was in this vein that the British government's last major public statement on the care of the elderly asserted that "care *in* the community must increasingly mean care *by* the community" (U.K. Department of Health and Social Services 1981, p. 3). This ideology derives in part from the desire to cut back the public health and social services, and in part from the powerful myth that the state has already taken over the function of the family. Thus, there is a tendency for policy makers lacking enthusiasm for the welfare state to look back to a mythical "golden age" of the family said to precede the welfare state. This myth has been exploded by authoritative historical research (Laslett 1971; Anderson 1971), but ideology clings to what research has disproved.

Caution is required, therefore, in accepting uncritically the simple assumption that "natural" helping networks are necessarily the *best* source of care. Indeed, the description "natural" networks (Collins and Pancoast 1976) is misleading because it conceals relationships, dependencies, and responsibilities which are *socially* constructed, such as the gender division in care. If we continue to accept them and indeed, sanctify them, as natural, then we are not likely to be in a position to construct policies to encourage alternative forms and divisions of care. The term networks can also be misleading; many are very small in size, perhaps one helper only (Stoller and Earl 1983). This can mean that an intolerable burden is borne by one person. Moreover, the only available kin may be the last person suitable to provide care if, for example, elderly mother and daughter have been on bad terms for years or upset each other when coming into close, prolonged contact (Qureshi and Walker 1986). Damaging, emotionally destructive relationships can occur within families as well as outside them. Then, there is the fact that informal support networks are not necessarily based on geographical proximity but kinship, religion, and race (Abrams 1978*b*, p. 86). If we assume the contrary we run the risk of imposing unwelcome external relationships on people. The standard of care provided to elderly people in these circumstances is not likely to be very high.

Sixthly, there is a risk that the community care option will be grasped enthusiastically by politicians primarily as a means of reducing the costs of health care. There is a constant tension in the formation of health and social services policy between cost-effectiveness and care-effectiveness. Often the cost comparisons between institutional and community-based forms of care are favourable to the latter because they are so inadequate (Wright 1982). Rather than there being a straightforward distinction between the roles of formal and informal care, the two are interdependent and the social services are required to promote care by families. For example, the health and social services can be important in preventing the build-up of physical and emotional strain, thereby increasing the capacity of those informal carers supporting even the most difficult elderly, mentally infirm people in the community. This means that a policy based on encouraging more informal care without, at the same time, developing formal community care services is not likely to be successful in promoting effective care for the elderly and will increase the costs falling on already hard-pressed carers (perhaps resulting in individual breakdown).

This brings us, seventhly, to the need to recognize, in community care policy, that the costs of informal care are borne primarily by women. The quality of life of *both* elderly people and their carers must be uppermost in policy formation. Although, "caring for the carers" is a popular slogan among policy makers at the moment, it is all too easy for them to accept the fact that, in the short term at least, they can rely on female kin to go on meeting the needs of their elderly relatives extremely effectively until they are no longer able to do so. (In the medium and long terms, the pressures outlined above will come to have an increasing influence on the provision of care.) However, this is an extremely shortsighted option since a breakdown in informal care will most likely result in institutionalization. It is important, then, to develop informal caring networks which do not exploit the duty felt by families, and above all by women, to provide care and which do not impose enormous financial, physical, social or psychological costs on carers.

Developing a Basis for Community Care

These seven points, based on the experience of social care planning in Britain over the last 30 years, might be combined to form the basis for developing more community-orientated forms of treatment and care in response to population aging. What changes are required in order to create the conditions necessary for the development of community care?

To start with it is necessary to create an economic and social framework conducive to community care. Informal support networks are relatively powerless in the face of major social deprivation and poverty. The increased risk of poverty in Canada over recent years, for both two-parent and one-parent families, will not help to foster community care. Moreover, although there has been a long-term fall in the poverty rate for the elderly the fact that one elderly Canadian in four lives below the poverty line demonstrates that this is a persistent problem in Canada like all western industrial societies (National Council of Welfare 1985, pp. 23 and 28). Poor elderly people need more health and social services than more affluent ones. This remind us of the interconnectedness of economic and social policies in the formal economy, resulting in unemployment and economic insecurity, can militate against the creation of caring relationships. In Garbarino's terms "Economic inadequacy...jeopardizes relationships" (1983, p. 26). It is unlikely that an increasing amount of care will be provided by the community without economic and social policies to care *for* the community (Walker [ed.], 1982*a*).

Change is required in the organization and operation of the formal services. In order to overcome the rigid division between the formal and informal sectors, it might be helpful to think more in terms of "social support networks" than informal support networks (Whittaker and Garbarino [eds.], 1983). Social support networks are not necessarily "natural" and may be created to fill a specific need. They may comprise *both* formal and informal carers, professional and non-professional personnel in the health and social services. The point is that care should be regarded in the form of a partnership between people with different skills, not the province of experts whether medically trained or otherwise. The challenge for policy is to interweave the contributions of the formal and informal sectors with the aim of maximizing the quality of care and the choices open to both carers and cared for.

In recent years, there have been several important innovations in the community-based care of elderly people which have attempted to break down traditional service delivery categories and interlink formal and informal services. Most notable in Britain are the Kent Community Care Scheme and the Dinnington Patch Project which have attempted to enhance the care and support provided by relatives, friends, and neighbours (Bayley 1982, pp. 186-87). The Kent Scheme includes the provision of specific budgets to enable social workers to pay informal carers to look after elderly people. There appears to be a similar experiment in formalizing the informal sector being conducted in Nova Scotia where some relatives are being paid up to $4,800 per annum to care for elderly people who would otherwise be institutionalized (Schwenger 1985, p. 23). It is essential that these and other similar developments in Canada are carefully evaluated.

Evaluations of various schemes in Britain have shown that it is possible to provide care in their own homes, or sheltered and very sheltered housing, for old people who might otherwise have been admitted to an institution, at no extra cost to the state. Some of these schemes include visiting wardens, radio alarms, emergency telephone services, personal alarms, good neighbours, neighbourly helps and home care assistants. There is sufficient evidence to show that informal or quasi-formal helpers can be organized into support networks and so delay the need for admission to hospital, residential and nursing homes. There is also mounting evidence that community-based alternatives to institutional care can be provided at substantially lower cost to the health and social services. Table 3-2 gives a comparison of costs for different forms of service and, although reservation must be expressed about such comparisons, indicates the potential financial pay-off associated with community care. Canadian experience too shows that a package of home care services can be provided to elderly people within their own homes for the "relatively controllable cost of about 10 per cent of the nursing home budget" (Kane and Kane 1985*b*, p. 1362) with the additional prospect of restricting the growth of institutions. It is not surprising, therefore, that a reduction in the institutionalization of Canada's elderly

Table 3-2

Public Expenditure Costs of Providing Different Services for High Dependency Elderly People, 1981-82[1]

Service:	Cost of provision to National Health Service in local authority (£ per person per annum)
Hospital	
– acute	20,036
– geriatric	14,531
– long-stay	15,064
Residential home	5,670
Sheltered housing	
– local authority	2,636
– housing association	2,667
Home based innovatory service plus medical and domiciliary services	
– individual radio alarm	2,157
– personal alarm	2,988
– visiting wardens	1,776
– good neighbours	1,639
– neighbourly helps	1,918
– home carers	4,306
– home care assistants	2,412

[1] Excludes transfer payments; includes capital, revenue and housing costs plus cost of medical and domiciliary services and innovatory service.

SOURCE A. Tinker, *Staying at Home* (London: HMSO, 1984), pp. 110-111.

has been identified as the largest potential source of savings in the cost of health care (Woods Gordon 1984).

While the various experimental projects provide grounds for optimism about the potential for interweaving formal and informal care networks, there is very little evidence of changes in traditional roles *within* either the family or the health and social services. This represents one of the major challenges to community care planning. There are hopeful signs, however, as far as the social services are concerned. In Canada there is the use of institutions as a basis for outreach services, while in Britain there is the Elderly Persons Support Units (EPSUs) innovation in Sheffield. EPSUs are intended to *replace* both residential care and traditional day and domiciliary care services and personnel within community support services – provided by all purpose, round-the-clock community support workers – aimed at keeping people independent in their own homes (MacDonald et al. 1984). In addition, there is the increasing use being made of residential homes for short-stay relief purposes.

In order to enable formal services to be more responsive to the needs of elderly people and their informal support networks, power must be redistributed within the health and social services and between the formal and informal sectors. A community-centred model of organization should entail community access to decision making and resources.

Change is necessary too in professional values and attitudes within the formal sector if a partnership between the formal and informal sectors is to be developed. This does *not* mean that there is a conflict between a policy to encourage social support networks and professional values in the health and social services (Whittaker and Garbarino [eds.], 1983, p.61). It is a matter of increasing the accountability of professionals rather than deprofessionalization. For various reasons, notably the power of the medical profession, this change is likely to be easier to achieve in social services than health services. Thus community care is probably best run initially as a social program rather than a health program (Kane and Kane 1985*b*, p. 1363).

It is important to reorientate policy makers and formal service providers away from a short-term, casualty perception of need towards a longer-term strategy of prevention. The function of responsible health and social services policies should not be confined to the management of stress. Instead of concentrating on coping strategies, they should be directed at preventing the causes of social breakdown and distress. Evaluation of initiatives attempting this sort of preventive strategy should be an important focus for research. It is harder for practitioners to justify expenditure on preventive action than on restorative reaction to a problem once it has occurred, and research into the resource implications of preventive action is also required to overcome this barrier. As part of this preventive strategy, it is necessary to recognize that short-term cost increases may be necessary to provide medium- to long-term savings.

Finally, a major social change is required to overcome the normative designation of women as carers and the "care trap" they are caught in, by moral imperative on them to care, and the lack of social support to substitute for them. In the absence of policies to overcome gender inequalities in society, as a whole, the best that can be hoped for are social care policies which do not put women under a greater obligation than men to provide care. A start can be made in this direction by ensuring that the availability of female kin is not a criterion for rationing formal care.

Increasing Cost-Effectiveness and Privatization

While a program of de-institutionalization/community care undoubtedly holds out the best prospect for meeting the needs of the elderly more effectively and, at the same time, containing health care costs (Woods Gordon 1984), these two further options will be considered briefly. Both have been given some prominence by the current British government in its desire to cut back the public sector and promote private care.

There is likely to be some scope for improving cost-effectiveness in the delivery of health and social services; although it would be mistaken to expect that substantial resources would result from this source and misleading to underemphasize the difficulties involved in securing such savings. In Britain a recent study of social services to the elderly, by the Audit Inspectorate (1983), suggested that savings might be made, for example, by improving the priority allocation of hospital beds, improving the operation of domiciliary services, and improving the co-ordination between residential and community care services. In the United States there is evidence of successful attempts to control acute hospital costs under Medicare (discussed by Professor Manton) and, in Canada, Ontario already has considerable experience in regulating hospital costs (Angus 1985, p. 8). The scope for increasing cost-effectiveness in Canada's health care system is discussed by Professor Manton. Before leaving the subject, however, it is worth reiterating the point that there may be tension between the drive for cost-effectiveness and the goal of care-effectiveness. There are a large number of studies assessing cost-effectiveness in service delivery but very few on the effectiveness of the care provided.

Turning to privatization, this represents a relatively simple way of reducing public health and social service costs, by shifting them into the private sector. In Britain, in recent years, there has been a substantial growth in the provision of private residential and nursing homes, subsidized by social security transfers, and the piecemeal privatization of ancillary services in hospitals – such as cleaning, laundry, and catering. There is no evidence that these recent changes have produced any significant savings in health and social services expenditure. Indeed, when viewed from the perspective of the overall use of national resources, the privatization of residential and nursing homes has the considerable disadvantage of increasing the proportion of elderly people in institutional care and, thereby, the proportion of national income spent on social care. It is likely that the higher percentage of GDP devoted to expenditure on health in Canada than Britain (8.2 per cent compared with 5.9 per cent) is partly attributable to the larger private sector in the former. Certainly the proportions of public expenditure on health in GDP are much more similar: 6.2 per cent in Canada compared with 5.5 per cent in Britain (OECD 1985, p. 12).

Conclusion

In common with other advanced industrial societies, Canada is in the process of developing a more balanced population structure. Regardless of what resource savings are derived from changes in policy, this major social change means that Canada must resign itself to devoting an increasing proportion of its health and social services budgets to meeting the needs of the elderly. The main pressure on the health system and health resources resulting from population aging and increased longevity will fall on long-term care services. It is possible, through the development of non-institutional community care policies to envisage the gradual reduction in the proportion of Canada's elderly in institutions with a consequent saving in health resources. This policy will not be universally welcomed, particularly from those with institutional power bases. But the community care strategy is favoured by most elderly people and their carers, precisely because it is non-institutional, locally based, and tends to gear services to their individual needs rather than fitting them into established regimes. This policy would not only have the benefit of responding to the needs of elderly people more effectively but it would also help to cut the cost of health care. It is an attractive option, therefore, for elderly people, informal carers and politicians. The main lesson from attempts in Britain to implement with varying success, such a policy over the last 30 years is not to underestimate the strength of the forces opposed to this apparently appealing policy and not to overestimate the caring capacity of the community.

Kenneth G. Manton

Efforts to project the future demand for various acute and long-term health care services must recognize that we are currently in a historically unique period, in that medical technology is becoming available, which can effectively manage and control the effects of chronic diseases at later ages. Until recently, it has been assumed that most gains in life expectancy would result from declines in infant mortality and mortality in early life (Omran 1971), that mortality at very advanced ages was immutable because it is due to biological senescence and that the life span was fixed (Fries 1980).

This view is inconsistent with most recent evidence. For example, mortality at advanced ages has been decreasing in certain developed countries – most notably Canada, the United States, and Japan (Manton 1984). Life expectancy in Japan, for example, has reached 80.2 years for females (WHO 1984*a*). In the Okinawan prefecture of Japan, female life expectancy reached 81.7 years in 1980 (Kuroda 1984), whereas in the state of Hawaii, non-white female life expectancy was 80.7 averaged over the three years 1979-81 (National Center for Health Services Research 1985). With Japanese male life expectancy at 74.5 years (WHO 1984*a*), the Japanese have exceeded many empirical forecasts of the "ultimate" human life expectancy (see, for example, Bourgeois-Pichat 1952, 1978; Siegel 1980). These life expectancies are even approaching the bounds of 82.4 to 85.6 years suggested as a theoretical maximum by Fries (1980).

Perhaps even more important is the fact that considerable potential for further life expectancy increases appears to exist. For example, there are considerable differences in the mixture of causes of death in Japan and the United States such that further reductions in the mortality risks of certain diseases in Japan appear possible (Manton 1984). In the United States, the country with the greatest life expectancy for white females at advanced ages, little evidence exists of the rectangularization of the survival curve that would be expected if the U.S. population were currently near an upper bound to life expectancy. Specifically, if a population were near to the "biological" upper bound for life expectancy, the variance of the ages at death would be expected to decline as life expectancy increased. U.S. mortality data show little tendency for the variance of the ages at death for persons at advanced ages to decrease over the period 1962 to 1979 (Myers and Manton 1984*a*, *b*). Indeed, there is some evidence to suggest that the variance of the ages at death might have increased, suggesting that survival at the very oldest ages was increasing even more rapidly than among the elderly in general. This was occurring during a period in which age reporting should have been improving, suggesting a possible downward bias on the estimate of change due to reduction of age over-reporting.

The implications of this and other evidence are twofold. First, we cannot be complacent in assuming that human biology will limit increases in life expectancy at advanced years and thereby restrict growth in the demand for health services. With increasing life expectancy at advanced ages, more person-years will be lived at advanced ages where acute and long-term health service demand is high. Second, we must develop new models and population concepts of health in order to understand what these life expectancy increases at later ages imply for changes in health status and functional ability at later ages and, derivatively, for the demand for health services (Manton 1982).

Health Transitions Among the Elderly

In this second task we can be guided by a recent WHO publication (1984*b*) on the epidemiology of aging. In that publication the relation of morbidity, disability, and mortality was described as a series of three survival curves as represented in Figure 3-1.

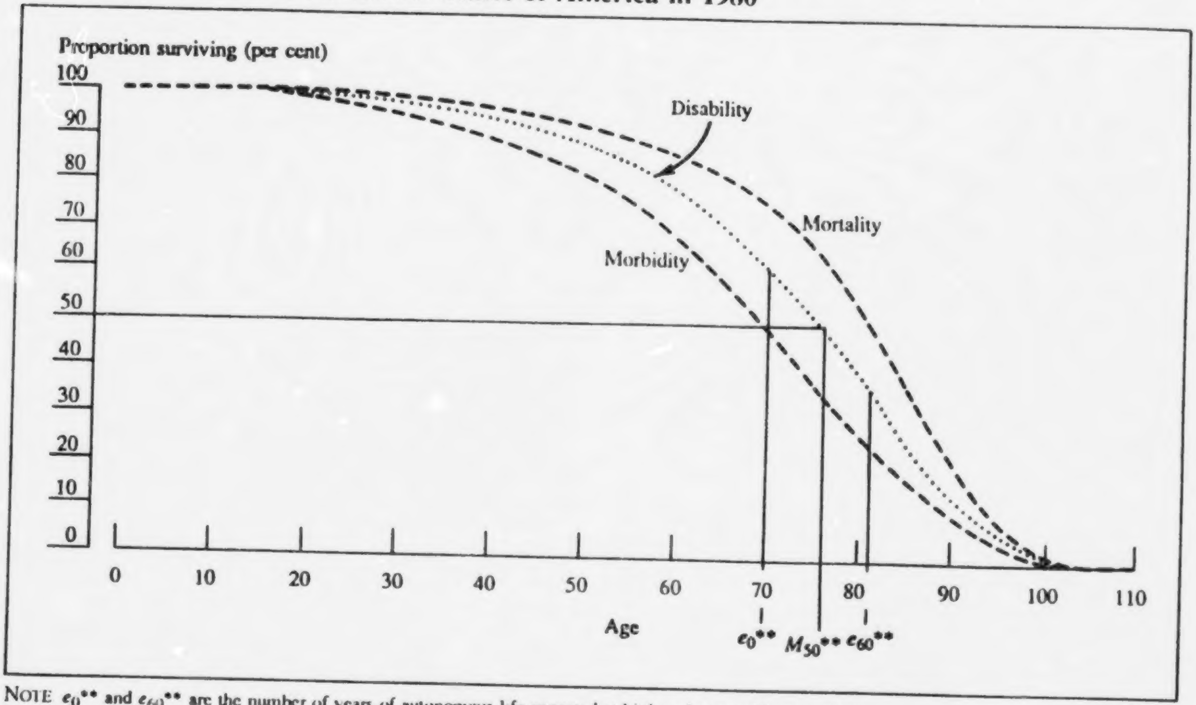
The outermost curve in Figure 3-1 labeled "mortality" represents a standard survival curve, i.e., it describes the proportion of survivors from a birth cohort that can be expected to survive to age X, given the mortality rates for that time period. The other two "survival" curves represent the probability of surviving to a given age, free of disability (labeled "disability"), and the probability of surviving to a given age, free of disease (labeled "morbidity"). In the figure, it is assumed that significant morbidity is an antecedent of disability. Similar curves have been used to examine the relation of disability to life expectancy gains in Canada (e.g., Wilkins and Adams 1983*a*), Japan (Koizumi 1982, pp. 6-1 and 6-19), and the United States (Sanders 1964). Basically, the set of three curves helps us to visualize the age-specific changes in morbidity and disability, associated with increases in life expectancy (i.e., the outermost survival curve shifting to the right).

Since the evidence seems to suggest that life expectancy is increasing at advanced ages and the survival curve is still moving to the right, it is important to know how the morbidity and disability curves are moving *relative* to the survival curve. The change in the relative position of the curves will tell us something of the change in demand for acute and long-term care services engendered by life expectancy increases. Specifically, the area between the curves represents the number of person-years that will be spent in that specific health state. If different levels of health resources are required to support a person in that health state, the total demands for services implied by a certain relation between the curves will be that level of resource demand times the person-years expected to be lived by the population in that health state.

The one scenario that we can confidently rule out with the available evidence is that the survival curve is currently fixed due to biological limits on life expectancy,

Figure 3-1

The Observed Mortality and Hypothetical Morbidity and Disability Survival Curves for Females in the United States of America in 1980



NOTE e_0** and e_{60}** are the number of years of autonomous life expected at birth and at age 60, respectively.
M_{50}** is the age to which 50 per cent of females could expect to survive without loss of autonomy.
SOURCE World Health Organization, *The Uses of Epidemiology in the Study of the Elderly*, TRS 706, Geneva, Switzerland (1984), p. 29.

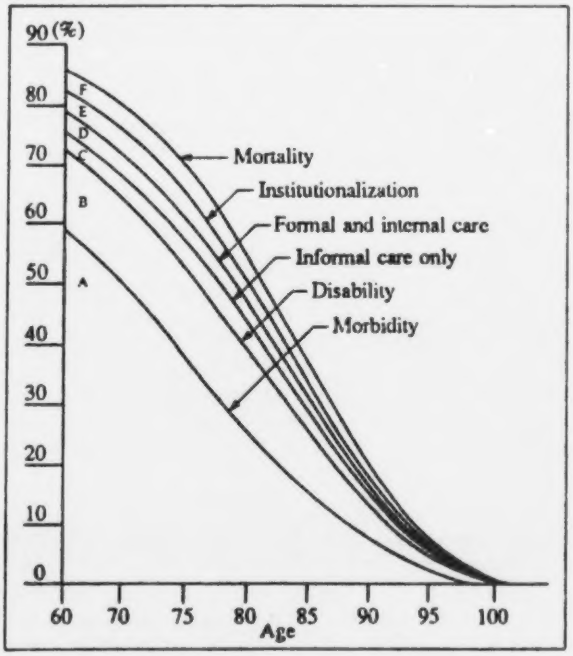
and that the morbidity and disability curves can be moved freely to the right to meet the survival curve – and hence to greatly reduce the demand for health services. The evidence suggests both: a) increases in life expectancy at later ages; and b) little reduction in the amount of time spent in the terminal phases of disease. For example, Wilkins and Adams (1983*a*, p. 107) estimate that, of a six-year increase in Canadian life expectancy from 1951 to 1978, 4.7 years of the increase was spent in an activity limited stage. This suggested a large increase in the amount of life span spent in a disabled state. Riley et al. (1985) found that in the United States, the proportion of total Medicare expenditures spent in the final year of life declined from 21.6 to 20.5 per cent between 1967 and 1982. During this period, large increases in life expectancy for both U.S. males and females over age 65 were evidenced. As a consequence, it was concluded that high intensity health care delivered during the final year of life was not disproportionately contributing to the total Medicare burden, but that balanced increases in the demand for all types of medical care by the elderly were occurring. Even on a per capita level, though the percentage of Medicare beneficiaries dying each year decreased during 1967 to 1982 from 5.4 to 4.8 per cent, Medicare disbursements in the final year of life had not increased dramatically. Indeed, from 1967 to 1975 per capita expenditure on survivors increased more rapidly (160 to 154 per cent) than for decedents (Riley et al. 1985). Between 1979 and 1982 the growth in per capita Medicare expenditures was very similar for decedents (61 per cent) and survivors (59 per cent). This, in combination with the data from Wilkins and Adams, and Koizumi, suggests that the period of life spent in disabled or activity restricted states may have increased as life expectancy increased, having an impact on the demand for long-term care services, but that such life expectancy increases have not greatly impacted per capita acute care expenditures.

In purely demographic terms, Manton (1986*a*, *b*) found that mean age at death from *all* major chronic diseases in the United States had increased – even for cancer which had increased in importance as a cause of death. Thus it appeared that all disease processes were delayed in their effect, but no single disease process was becoming predominant, nor was there a large increase in cause of death associated with extreme debilitation (Manton 1986*a*).

In order to determine what a particular change in the relation of morbidity, disability, and mortality implies for long-term care (LTC) service use we need to elaborate Figure 3-1 by linking to it the types of services that would be required at various levels of morbidity and disability. In Figure 3-2 we imposed various LTC service options on the three survival curves represented in Figure 3-1 (Soldo and Manton 1985).

Figure 3-2

The Observed Mortality and Hypothetical Mobidity, Disability, and Long-Term Care Service-Use Survival Curves for U.S. Females, 1980



SOURCE B. J. Soldo and K. G. Manton, "Health status and service needs of the oldest old: Current patterns and future trends," *Milbank Memorial Fund Quarterly* (1984).

We can see that, as one progresses to the right, the level of functional impairment and the corresponding intensity of services increases. One of the major policy issues is how much substitution between various service options is possible at specific ages, for specific types of impairment, and in what social and economic condition. This problem will be considered in greater depth in a later section.

The Aggregate Demand for Health Services

In the prior section we focused upon measures of health transitions applicable at the individual level. In order to project service needs for the elderly population we must apply models of those transitions to the population structure existing at the relevant point in time. What we will find is that demographic structure will be the prime determinant of changes in the demand for health services in the near future, likely to overwhelm existing differences in treatment patterns, and likely changes in the rate of health transitions at advanced ages. In large part, this is a consequence of increased fertility after the Second World War which created a "baby boom" cohort or population "wave." When this cohort reaches retirement ages, and the ages at which the demand for health services is very high, the demand on health care resources will increase greatly. For example, in the United States, Torrey (1984, p. 9) has estimated that, by the year 2000, the population aged 80 and over will become the largest single federal entitlement group receiving, in 1984 dollars, $85.5 billion in benefits. Dramatic increases of this amount can be expected since the postwar baby boom cohorts will reach age 65 in 2010 and 2015, and age 85 in 2030 to 2035. Assuming constant service rates, Rice and Feldman (1983) have projected that by the year 2040, the number of short-stay hospital days for persons aged 75 and over will increase 291 per cent from 56.1 million days in 1980 to 219.4 million days. The projected number of nursing home residents aged 75 and over will increase 318.5 per cent to 4.5 million over the same period. Similar growth seems likely in Canada as is illustrated in Table 3-3.

We see that between the years 1980 and 2025, the total population aged 65 and older is projected to grow over triple, from 2 to 6.2 million persons (United Nations 1985, pp. 318-19). The increase in the proportion of the population aged 65 and over is projected to be very similar to that in the United States – from 8.9 per cent in 1980 to 18.1 per cent in 2025.

Table 3-3

Growth of the Canadian Elderly Population, 1980-2025

	1980	1985	2000	2025	Δ%
Age group:					
65-69	806	861	1,030	2,169	+169
70-79	877	1,181	1,684	2,949	+236
80 and over	367	426	695	1,126	+206
Total 65 and over	2,049	2,468	3,439	6,244	
Percentage of elderly 80 and over	17.9	17.3	20.2	18.0	
Percentage of total population 80 and over	1.5	1.7	2.4	3.3	
Total population	24,098	25,605	29,435	34,447	

SOURCE United Nations, *World Population Prospects: Estimates and Projections as Assessed in 1982*. Population Studies, No. 86 (New York: U.N., 1985), pp. 318-19.

Of more concern for total service use (i.e., both acute and LTC) is the growth of the population aged 80 and over. This group is projected to increase 206 per cent to 1.1 million persons by 2025, and 2025 is before the baby boom cohort reaches age 80. Thus we would suggest that the increase in the elderly and very elderly population is likely to overwhelm any reasonable reductions in per capita service use, due to either homogenization of service delivery between areas (some of which may be undesirable to eliminate), or increases in efficiency of service delivery.

The situation in the United States and Canada is likely to be replicated to some degree in many other developed nations. In Japan, for example, the aging of the population is even more rapid than in the United States and will produce even greater proportions of persons over age 65 (e.g., in 2025 in the United States, 19.5 per cent of the total population are projected to be age 65 and over [U.S. Bureau of the Census 1984, Table 6]; in Japan the projected figure is 23.8 per cent [Kuroda 1982, Table 1, pp.1-1 and 1-13]). As a consequence of these demographic forces there will be a need for providing large amounts of new resources for both acute and long-term health care services in the future. No reasonable combination of changes in other factors is likely to eliminate that need and it must be faced squarely.

Strategies for Controlling the Rate of Increase in the Demand for Health Care

Though an increase in demand for acute and long-term health care services will be generated by demographic factors this does not mean that we are helpless in attempting to control the growth of such expenditures – control can be exerted in ways that may fulfill both humanitarian and economic goals. Two basic strategies for controlling the growth of expenditures will be presented, and the possible effects of each will be discussed in the following sections.

Disease and Disability Prevention and Health Promotion at Later Ages

Scientific evidence on the rate of physiological "aging" (as opposed to the simple accumulation of more chronic diseases due to a longer life span) has been dramatically revised very recently. Up to 1982, much biological evidence was available to suggest that the functional capacity of many physiological systems declined rapidly with age (Besdine 1984). A fundamental flaw in many of those studies becomes generally apparent only as recently as 1982. Specifically, many of those study populations had been drawn to be representative of the elderly population. Since the elderly population has a high prevalence of chronic diseases, the investigators were determining the rate of physiological aging change in a mixed population. The measured rate of decline was the decline averaged over healthy persons and over very sick persons. Thus the rate of decline was confounded with the prevalence of chronic disease at different ages (Besdine 1984).

In contrast, the evidence from recent studies of healthy elderly populations shows that the rates of physiological decline are nowhere near as sharp as once thought. For example, Lakatta (1983) has shown that healthy 80-year olds can have as good cardiac output as healthy 30-year olds. Sharp declines in neurological function also do not seem an inevitable consequence of aging with much of those declines attributable to an explicit disease entity, i.e., Alzheimer's disease. Dietary supplementation seems to hold promise for arresting the ravages of osteoporosis and its acute, life threatening sequelae-hip fracture. Studies are now underway in the United States to determine if there are survival benefits to controlling isolated systolic hypertension at advanced ages (Minaker and Rowe 1985).

The primary point to be made from these and other examples is that preventative measures may be able to improve the health status of even very elderly persons by preventing or delaying the onset of disease. If we delay the onset of disease and disability, we can expect increases in life expectancy. However, the evidence suggests that increases in life expectancy are less likely to increase acute care expenditures since those expenses are concentrated in the last year of life. As indicated previously (Riley et al. 1985), there is no evidence in the United States that Medicare expenses in the terminal phase of disease has increased as a proportion of total health expenditures – observations made over a period in which life expectancy at advanced ages had increased.

What is likely to increase, however, are LTC expenditures which are linked directly to the age-specific prevalence of functional limitations but only indirectly to the age-specific prevalence of chronic disease. We can examine the disability-disease relation using data from the 1982 U.S. National Long-Term Care Survey (NLTCS) – a national survey of 6,400 elderly persons in communities who reported an ADL or IADL limitation of at least three months duration (Manton 1986*b*). In Table 3-4, we present the proportion of all such chronically disabled persons who report having a given disease or condition contributing to their chronic disability.

We see that these numbers are broken down by age and broad disability levels. We can also see that the

Table 3-4

Age-Specific Conditional Probabilities of Having a Specific Medical Condition for Persons with a Given Disability Level

	IADL	1-2 ADL	3-4 ADL	5-6 ADL	Total
Condition:					
Number of persons with condition – age 65-74					
Cancer	39,288	36,349	16,099	33,793	125,529
	(5.61)	(5.65)	(5.77)	(10.40)	(6.44)
Diabetes	50,026	70,220	29,235	49,353	198,834
	(7.15)	(10.92)	(10.48)	(15.19)	(10.21)
Senility	30,485	20,202	3,651	9,610	63,948
	(4.36)	(3.14)	(1.31)	(2.96)	(3.28)
Emphysema and bronchitis	65,549	44,768	22,939	36,766	170,022
	(9.36)	(6.96)	(8.22)	(11.31)	(8.73)
Ischemic heart disease	50,124	33,039	10,919	23,020	117,102
	(7.16)	(5.14)	(3.91)	(7.08)	(6.01)
Hypertension	99,859	87,214	46,324	36,830	270,227
	(14.27)	(13.56)	(16.60)	(11.33)	(13.87)
Arteriosclerosis	207,551	179,151	105,398	166,915	659,015
	(29.65)	(27.86)	(37.78)	(51.36)	(33.83)
Arthritis	213,611	292,215	121,967	90,565	718,358
	(30.52)	(45.45)	(43.72)	(27.87)	(36.88)
Cerebrovascular disease	183,494	170,032	94,669	150,303	598,498
	(26.21)	(26.44)	(33.93)	(46.25)	(30.72)
Hip and other fractures	168,636	215,994	90,084	98,232	572,946
	(24.09)	(33.59)	(32.29)	(30.23)	(29.41)
Total	700,000	643,000	279,000	325,000	1,948,000

Table 3-4 (concl'd.)

	IADL	1-2 ADL	3-4 ADL	5-6 ADL	Total
Number of persons with condition – age 75-84					
Cancer	25,528 (4.42)	24,883 (3.80)	6,503 (2.46)	23,826 (7.31)	80,740 (4.43)
Diabetes	36,987 (6.41)	45,350 (6.93)	17,874 (6.77)	36,631 (11.24)	136,842 (7.51)
Senility	81,588 (14.41)	89,603 (13.70)	21,832 (8.27)	53,464 (16.40)	246,487 (13.54)
Emphysema and bronchitis	25,065 (4.34)	31,276 (4.78)	9,845 (3.73)	17,946 (5.50)	84,129 (4.62)
Ischemic heart disease	27,317 (4.73)	26,796 (4.10)	13,941 (5.28)	21,973 (6.74)	90,027 (4.94)
Hypertension	67,258 (11.66)	57,374 (8.77)	22,090 (8.37)	28,665 (8.79)	175,387 (9.63)
Arteriosclerosis	173,000 29.98	205,980 (31.50)	106,042 (40.17)	202,242 (62.04)	687,264 (37.74)
Arthritis	187,094 (32.43)	272,663 (41.69)	125,988 (47.72)	106,530 (32.68)	692,275 (38.02)
Cerebrovascular disease	152,883 (26.50)	174,547 (26.69)	91,043 (34.49)	151,801 (46.56)	570,274 (31.32)
Hip and other fractures	95,356 (16.53)	163,321 (24.97)	81,700 (30.95)	58,504 (17.95)	398,881 (21.90)
Total	577,000	654,000	264,000	326,000	1,821,000
Number of persons with condition – age 85 and over					
Cancer	1,511 (0.77)	7,800 (2.34)	1,638 (1.08)	6,011 (3.01)	16,960 (1.93)
Diabetes	4,036 (2.07)	10,381 (3.11)	4,970 (3.29)	9,583 (4.79)	28,970 (3.29)
Senility	78,781 (40.40)	98,455 (29.48)	44,553 (29.51)	82,659 (41.33)	304,448 (34.60)
Emphysema and bronchitis	3,696 (1.90)	4,859 (1.45)	4,100 (2.72)	1,646 (0.82)	14,301 (1.63)
Ischemic heart disease	6,403 (3.28)	10,382 (3.11)	2,990 (1.98)	8,984 (4.49)	28,759 (3.27)
Hypertension	17,052 (8.74)	29,439 (8.81)	11,338 (7.51)	17,267 (8.63)	75,096 (8.53)
Arteriosclerosis	47,554 (24.39)	96,528 (28.90)	49,186 (32.57)	103,133 (51.57)	296,401 (33.68)
Arthritis	45,103 (23.13)	133,148 (39.86)	63,577 (42.10)	65,122 (32.56)	306,950 (34.88)
Cerebrovascular disease	36,607 (18.77)	79,164 (23.70)	37,437 (24.79)	84,209 (42.10)	237,417 (26.98)
Hip and other fractures	23,571 (12.09)	67,085 (20.09)	37,647 (24.93)	32,464 (16.23)	160,767 (18.27)
Total	195,000	334,000	151,000	200,000	880,000

NOTE Figures in parentheses are percentage of persons within age group with condition.
SOURCE Tabulations of the 1982 National Long-Term Care Survey (NLTCS).

conditions most strongly associated with mortality (e.g., cancer and heart disease) are not strongly associated with disability. This seems reasonable given the relatively lethal and rapid course of those diseases. The conditions that produce the largest proportion of disability (arthritis, senility, atherosclerosis, and fractures) are not the diseases that we classically associate with mortality. Thus it appears possible to target for prevention, diseases, and conditions that produce disability but which have much less direct effect on mortality. Such disease targeting could significantly lower the demand for LTC services by improving the functional status of surviving elderly persons.

It is reasonable to ask what the magnitude of the effect of prevention activities directed to disability might be. We can again examine this using disability rates estimated from the 1982 NLTC survey and the 1977 National Nursing Home Survey (NNHS). With these rates we projected: a) the future age-specific numbers of persons who have disabilities at different levels; and b) the number of informal care-giver hours needed to provide services to those people at current levels of care, both totally and per capita. These projections for the years 2000 and 2040 are presented in Table 3-5.

In this table we see that the growth of the U.S. dependent elderly population, living in the community and in nursing homes, will be 39 per cent from 1982 to 2000 (i.e., 6.4 million in 1982 to 8.9 million in 2000). From 2000 to 2040, the growth is 100 per cent (from

Table 3-5

Projections of Number of Persons Age 65 and Over with Disability and Living in the Community or in Nursing Homes and Number of Informal Helper-Hours, by Age, 2000 and 2040

	Disability level in community [1]					
	IADL	1-2 ADL	3-4 ADL	5-6 ADL	In nursing home[2]	Total
			Number of persons (thousands)			
Year 2000						
65-74	787	726	317	371	263	2,464
75-84	878	980	405	504	762	3,529
85 and over	382	666	300	401	1,130	2,879
65 and over	2,047	2,372	1,023	1,276	2,155	8,872
Year 2040						
65-74	1,253	1,162	512	592	436	3,955
75-84	1,710	1,899	784	989	1,484	6,866
85 and over	929	1,613	735	969	2,685	6,930
65 and over	3,893	4,674	2,031	2,549	4,605	17,751
			Total informal helper-hours per week (thousands)			
Year 2000						
65-74	14,701	15,860	9,107	14,643		54,312
75-84	16,466	21,209	12,064	19,454		69,193
85 and over	8,188	15,944	9,734	16,147		50,013
65 and over	39,356	53,014	30,904	50,244		173,518
Year 2040						
65-74	23,489	25,436	14,755	23,244		86,924
75-84	32,137	41,416	23,571	38,165		135,289
85 and over	20,139	38,981	24,076	39,103		122,299
65 and over	75,765	105,833	62,402	100,513		344,512

NOTE Totals may reflect roundings.

1 Tabulations of the 1982 National Long-Term Care Survey (NLTCS).

2 Tabulations of the 1977 National Nursing Home Survey (NNHS).

8.9 million to 17.8 million) with much of this growth concentrated among the high service use 85-year olds (e.g., 141 per cent from 2000 to 2040). In the table, we also translate these numbers into the amount of informal care services required per week by multiplying them by the age- and disability-specific average hours of excess care provided to these persons (ranges from 18.7 hours for 65-74 year-old persons with only IADL limitations to 40.2 hours for those 85 and older with five to six ADL limitations). We can see that the total amount of LTC services provided from informal care sources is enormous – even a small percentage shift from informal to formal care would be quite expensive. The increase in the demand for services is a function of two factors: a) the larger size of birth cohorts who enter age ranges where the need for LTC services is high; and b) projected increases in life expectancy which increase the amount of time a person is expected to have need for LTC services.

Suppose that we now introduce prevention efforts that decrease the amount of time that a person spends in a disabled state and further suppose that these efforts are as successful as those targeted to reducing mortality (i.e., that both the disability and survival curves move to the right an equal amount). The natural question that emerges is how much this affects the demand for LTC services. In order to assess this we recalculated the projections presented in Table 3-5 to reflect the disability prevention activities. The age- and disability-specific reductions are presented in Table 3-6.

We can see that the potential reductions in the demand for LTC services are great. The reductions in the numbers of dependent elderly is 21 per cent for the year 2000 and 32 per cent by the year 2040. Due to the higher service use by the extreme elderly, the reduction in the number of informal care-service hours is slightly less – 19 per cent for the year 2000 and 30 per cent for 2040. Nonetheless, the projected service use reduction is very large (about 1.7 billion man-hours in 2000 and 5.4 billion in 2040) though still far less than the increases due to purely demographic factors.

Management and Control of Health Service Costs and Delivery Systems

Though the evidence suggests that various interventions can improve the health and functional capacity of the elderly, they did not come close to matching the increases needed to meet the growth in resource demand due to population aging. Hence it will also be important to regulate the usage of acute and long-term care services in order to control resource consumption. Furthermore, such regulation must be done in a way that preserves the ability to vary responses to the different health care needs of geographically distinct populations, preserve certain functional specializations of the total health service delivery system, and maintain the quality of health services.

One such methodology that has proven to be quite effective in regulating consumption while permitting necessary heterogeneity in the patterns of service use is the prospective reimbursement mechanisms developed for controlling acute hospitalization costs under Medicare. This system, based upon fixed reimbursement for each of 467 diagnosis related groups (DRG), has shortened hospital stays *and* reduced the rate of hospitalization. The central mechanism of this system is the DRG specific cost multipliers which adjust the per case reimbursement level to reflect appropriate costs and thus maintain the incentives for hospitals to treat more serious cases.

The DRG system, though currently used as a reimbursement device, was originally developed as a tool for hospital management. In this regard, it is appropriate for implementation in hospitals where there is a fixed global budget to determine the relative cost performance of different units. The DRG system is employed in the latter way in the U.S. Veterans' hospital system and is currently being evaluated for use as a management device in several European countries.

The DRG system as implemented has proven quite successful in controlling resource consumption. Several concerns remain over its current form which may eventually require modification.

One concern has to do with the accuracy of the case-mix measures employed. In particular, it has been argued that the current DRG system does not adequately reflect the severity of the medical conditions, and thus not reflect differing levels of intensity of services required within DRG categories. In an actual sense, the failure to represent condition severity should not adversely affect the finances of large hospitals or hospital chains since costs should average out over a large series of patients. However, hospitals with specialized referral services may systematically draw more severe cases within a DRG category (Manton and Vertrees 1984). Furthermore, there is a tendency for hospitals to view the DRG reimbursement as an upper bound to case costs – rather than as an average. This is especially true for smaller hospitals which do not have adequate patient-flow to

Table 3-6

Projections of Number of Persons Age 65 and Over with Disability and Living in the Community or in Nursing Homes and Number of Informal Helper-Hours, by Age, Adjusted to Reflect Reductions in Disability, 2000 and 2040

		Disability level in community[1]				
	IADL	1-2 ADL	3-4 ADL	5-6 ADL	In nursing home[2]	Total[3]
			Number of persons (thousands)			
Year 2000						
65-74	660	608	266	311	220	2,065 (–16)
75-84	704	781	321	405	596	2,807 (–20)
85 and over	300	522	236	313	789	2,160 (–25)
65 and over	1,663	1,912	823	1,029	1,605	7,032 (–21)
Year 2040						
65-74	914	846	373	431	317	2,882 (–27)
75-84	1,192	1,317	539	692	1,003	4,743 (–31)
85 and over	631	1,094	498	651	1,562	4,436 (–36)
65 and over	2,737	3,257	1,410	1,775	2,881	12,061 (–32)
			Total informal helper-hours per week (thousands)			
Year 2000						
65-74	12,334	13,285	7,633	12,277		45,528 (–16)
75-84	13,234	16,999	9,595	15,620		55,448 (–20)
85 and over	6,442	12,529	7,644	12,568		39,183 (–22)
65 and over	32,011	42,813	24,872	40,465		140,159 (–19)
Year 2040						
65-74	17,164	18,525	10,760	16,960		63,415 (–27)
75-84	22,472	28,877	16,252	26,659		94,260 (–30)
85 and over	13,708	26,481	16,328	26,213		82,730 (–32)
65 and over	53,344	73,883	43,341	69,832		240,405 (–30)

[1] Tabulations of the 1982 National Long-Term Care Survey (NLTCS).
[2] Tabulations of the 1977 National Nursing Home Survey (NNHS).
[3] Percentage decline from Table 3-5.

insure actuarial stability. Consequently, there is a premium to reflect case severity and special patient characteristics (such as the high prevalence of multiple chronic conditions among the very elderly; Maddox and Manton 1986); as accurately as possible in the case-mix system. One factor to be kept in mind in the adjustment of the reimbursement limit for severity is that increased severity does *not* always translate into increased cost. For example, it has been found that, while terminal leukemia hospitalization costs several times the typical leukemia hospitalization, terminal lung cancer hospitalizations are less expensive on average. This cost differential appears to be related to the prognosis for the condition in the terminal hospitalization (Manton and Vertrees 1984).

A second important consideration in the further development of DRGs is the recognition of the need for specialization of hospitals and other health service facilities. That is, there is a need for different hospitals to provide different types of services both for the attendant economies of scale and possibly for the better provision of specific high-technology treatment and diagnostic services. This is partly recognized in the current DRGs in terms of the teaching hospital adjustment. A more comprehensive adjustment was developed in the state of Pennsylvania where an additional multiplier to the DRG based reimbursement for Medicaid cases was developed. This case-mix adjustment for hospital type was determined by analyzing the special traits of hospitals providing services to different mixes of patients (Vertrees and Manton 1986). It appears desirable to maintain certain types of service specializations between facilities to increase the overall efficiency of the system.

Perhaps the greatest concern about the current DRG mechanism is that it covers only one feature of the total-care delivery system. Thus one way for hospitals to manipulate the system is to discharge patients earlier, and in a more morbid state, to LTC facilities – thereby increasing the medical acuity of their patient populations and increasing their resource consumption. Additionally, home health service reimbursement under Part A, Medicare has been the most rapidly expanding benefit in recent years.

In order to control expenditures, it will be necessary to include those LTC portions of the health service system in the prospective reimbursement system. The development of case-mix measures for LTC services is particularly difficult because more dimensions are relevant in determining the need for LTC services. For example, in addition to medical status, functional limitations are very important in determining the demand for LTC services as is the social and economic status of the family – the primary source of informal care services. Development of such a case-mix measure is possible through the use of multivariate grouping procedures. For example, one grouping procedure (Woodbury and Manton 1982) generates a classification based on: a) a set of K groups defined on the basis of J variables defining the set of variables relevant to the demand for services; and b) a set of K weights for a person which determines how much each of the K^{th} profiles describes the individual's need for service. Because the weights allow a person to be a partial member of more than one group we can continuously adjust reimbursement for individual cases by "blending" the estimated price or cost for providing services to each of a basic set of case profiles or types.

In an analysis of the U.S. home health benefit (Manton and Liu 1986), we found that a case-mix measure could be based on six dimensions derived from 56 measures of health and functional status. One dimension represented a reasonably healthy group with only acute hospitalization while the other five groups involved chronic conditions and disabilities; specifically, a hip fracture group, a cancer group, a chronic circulatory disease group, a senile group, and a neurologically impaired group with a high level of associated acute medical problems. The costs between the most extreme groups varied by a factor of five to one. Any individual's projected relative cost, however, would be a weighted sum of the relative costs for these six groups. This allows for patient heterogeneity with the price structure of the six groups.

A serious problem in devising such reimbursement systems is how to deal with the boundaries between various service subsectors (i.e., acute hospitalization; home health; nursing home use). In this situation, the case-mix weights can be mixed with the transition probabilities between various service types where the transition probabilities are themselves functions of policy-specific variables (Manton and Yashin 1986).

Clearly one of the problems with the DRG system is that it represents a fixed fee for a particular service within a particular sector of the health service system. There is some sentiment that eventually capitation for some fixed interval will provide a more efficient system. Development of a capitation system, however, involves: a) resolving the difficult problem of antiselection, i.e., selection of the healthier enrollees; and b) defining the point of fiscal responsibility for the system in terms of maximizing the flexibility of the response of the system to true medical problems with the ability to minimize the fiscal risk of the system (Tolley et al. 1986). Resolution of these problems requires resolving such questions as how to implement the development of very accurate case-mix measures, the optimal size of HMOs (Tolley et al. 1986), and different strategies for case management and reinsurance.

Discussion

In the above, we discussed the likely changes in future demand for acute and LTC services in the United States, Canada, and other developed countries. We concluded that demographic factors (i.e., the larger size of more recent elderly cohorts and increasing life expectancy at advanced ages) were likely to require increased resources for health services – especially LTC services directed to the extreme elderly – regardless of what combination of responses are implemented to regulate service use. We also concluded that life expectancy is not currently near its maximum value, and that medical expenditures in the final year of life are not greatly increased by rising life expectancy though LTC expenses may be. We did suggest that the growth in the demand for resources could be controlled through several devices.

The first device is based upon the observation in many recent studies that much ill-health and functional disability at advanced ages are due to preventable diseases (Manton 1986*c*). Thus one strategy for controlling costs is to develop interventions to prevent the emergence of chronic disease and disability at advanced ages. The second strategy involved the development of cost-control strategies through prospective reimbursement systems for specific service episodes. A third strategy involved capitation models where reimbursement is for a fixed service interval.

We discussed problems in the development of such control strategies for comprehensive health-service delivery systems, i.e., for home health and nursing home services as well as for acute hospitalization. It was suggested that control strategies must tolerate heterogeneity in treatment response because of future medical differences between populations, and because of a need to have facility specialization in large scale health-service delivery systems. Reimbursement on appropriately devised actuarial measures with case-mix adjustments seems to be an effective strategy for tolerating heterogeneity of response in a complex service delivery system, and for retaining adequate levels of individual responsibility (fiscal risk in a privately funded system) and decision making.

Noralou P. Roos, Evelyn Shapiro and Betty Havens

The focus of this conference, *Aging with Limited Resources*, highlights a preoccupation of health care planners across North America and around the world. Two important facts have given rise to this preoccupation:

1. The number and proportion of elderly, especially the very elderly (those 85 years and over), is increasing; and

2. Elderly individuals, particularly the very elderly, consume a disproportionate share of health care resources.

No one disputes these facts. However, as material prepared for this conference suggests, there are many unresolved questions about what is driving the system and what aging per se has to do with the consumption of limited health resources. This paper will focus upon four characteristics of elderly individuals' use of hospital services which are not very well understood:

1. It is not "the elderly" and it is not even "the very elderly" who are high users of health care services. The great majority of elderly individuals, even the majority of very elderly individuals, are healthy and infrequently hospitalized. Only a small segment of this population produces the statistics of concern to health care planners.

2. Hospital stays of elderly patients, particularly the very elderly, are much less likely to be resource intensive (i.e., expensive) than are hospital stays of younger individuals. Elderly patients' hospital days are more likely to be spent in low-cost small hospitals (rather than in high technology teaching hospitals) and in lengthy stays (which include substantial amounts of custodial care) than are those of younger individuals.

3. Dying is a much more important factor than aging per se in the high usage of hospitals. For the elderly, as for the non-elderly, a dramatic increase in utilization occurs in a relatively short period before death (one year or less).

4. The elderly population's use of health care resources is strongly influenced by factors other than "need." The availability of hospital beds, how physicians practice medicine, and the increase in physician supply over the next several decades will undoubtedly influence hospital consumption more than will the aging of society.

Method

Data for these analyses are drawn from three ongoing research projects, the Manitoba Longitudinal Study on Aging, the Manitoba Study of Common Surgical Procedures, and the Study of Health Care Utilization in the Four Years Before Death.

The Manitoba Longitudinal Study on Aging (MLSA) is fully described elsewhere (Mossey et al. 1981; Roos and Shapiro 1981). Briefly, the MLSA merged data from extensive interviews in 1971 of a randomly selected, province-wide sample of just over 4,800 elderly

Manitobans (Manitoba Department of Health and Social Development 1973) with claims documenting these individuals' health care utilization over an eight-year period (1970-1977). The claims are filed routinely by hospitals and physicians with the government agency responsible for administering the universally insured medical and hospital services in the province. The medical and hospital data have also been described elsewhere (Roos et al. 1979), and all tests to date suggest that the data base provides a reasonably accurate, reliable, and valid representation of health care utilization. The absence of deductibles or co-payment, coupled with the physician's natural inclination to claim for service, limits the likelihood of under-reporting. Regular audits asking patients to confirm the receipt of services and the monitoring of physician patterns of practice profiles, discourage over-reporting of services. Since Manitoba residents are reimbursed for physician visits and hospitalizations which occur outside the province, Manitobans also have every incentive to report any out-of-province utilization to the health commission.

The Manitoba Study of Common Surgical Procedures (Roos and Roos 1983) uses the same claims data base to focus on provincial surgical practice patterns as well as upon nine common procedures, including those primarily performed in the elderly population – cataract surgery and prostatectomy. As a part of this research, a probability sample of the population 25 years and over (stratified by age, sex, and urban versus rural residence) was drawn from the 1974 Manitoba Health Services Commission (MHSC) master registry. Hospital and physician visits for this group (n = 8,000) were summarized and pivoted around a July 1, 1974 date.

The study of utilization in the four years before death also relies on the claims data base. All individuals (approximately 3,700) who died between July 1974 and June 1976 from a probability sample of 80,000 individuals aged 25 years and over were identified. This probability sample was drawn from the same source and stratified in a manner parallel to the 8,000 sample described above. All hospital stays in the four years prior to death were summarized for these individuals. Individuals hospitalized out-of-province or in an extended treatment hospital were excluded from all analyses, as were individuals whose claims identifiers were inconsistent or whose period of coverage in the insurance system was incomplete.

The method for identifying individuals' primary physicians and physicians' hospitalization style is described fully in Roos et al. (1986). Briefly, individuals from the 80,000 sample were assigned uniquely to that physician (general or family practitioner, internist, general surgeon or gynecologist) seen most frequently over a two-year period. An individual so assigned was referred to as one of the physician's "primary patients."

A physician's hospitalization practice style is defined as his "case-mix adjusted total days of hospitalization per primary patient." This measure was calculated as follows: 1) each patient's hospital experience was summarized in terms of number of days spent in hospital over a two-year period and each patient (and his hospital days) was assigned to his primary physician; 2) a physician's actual ("observed") score was determined by aggregating the hospitalization experience of the primary patients assigned to him; 3) this score was then adjusted for differences in primary patient case-mix. The estimates of the "expected" probability of hospitalization were derived empirically through the use of ordinary least squares (OLS) multiple regression and multiple logistic regression models relating patient-specific information to the outcome measures.[1] After estimating the probability of hospitalization from the logistic regression model or expected hospital days from the OLS regression model for each individual, the probabilities or expected hospital days were summed over all individuals in a physician's practice producing the "expected" measures; 4) These expected "scores," i.e., each individual's predicted total days hospitalization resulting from the regression equation, were also aggregated over each physician's primary patients; and 5) each physician could then be characterized by a case-mix adjusted measure. This measure was calculated by first dividing a physician's actual total days of hospitalization for his primary patients by the expected total days of hospitalization for these patients. This ratio was then multiplied by the provincial average number of days of hospitalization per patient. This adjusted measure was used to rank physicians according to practice style from least to most hospital-prone in quartiles.

The extent to which primary patients of physicians with differing practice styles were similar after case-mix adjustment was tested using two independent samples of primary patients. The primary patients of physicians in the three highest quartiles were quite similar in terms of factors putting elderly individuals at risk of hospitalization: scores on such measures as the mental status test, self-rated health status, the number of health conditions reported and the number of disabilities reported, and the degree to which the respondent required help from a proxy in completing an interview. On each of the measures, patients of physicians in the lowest quartile scored somewhat better, suggesting that they might be somewhat healthier than others despite case-mix adjustment.

Results

Which Aged?

Cross-sectional analyses reveal that about 20 per cent of the elderly are hospitalized in any given year and that a much smaller proportion (5 per cent) consume about 60 per cent of the hospital days used by all the elderly persons in a one-year period (Roos and Shapiro 1981).

Over a five-year period, almost half (42 per cent) of an elderly cohort was never admitted to hospital. Most of those admitted one or more times during this period tended to accumulate very few hospital days but a very small group of these elderly patients (2 per cent) used 20 per cent of the days. The analysis was repeated for the very elderly group, i.e., those aged 85 and over; this group has the highest hospitalization rate and the largest projected growth rate. The patterns were generally similar. Thirty-five per cent of these very elderly individuals were not admitted to hospital over a five-year period and 4 per cent of this group accounted for 32 per cent of the total hospital days used.

Which Resources?

One hospital day is not necessarily equivalent to another hospital day in terms of resources expended on the patient. The size of these differences is difficult to calculate, particularly in a province like Manitoba which funds hospitals on the basis of global budgets. However, even a gross comparison (which includes capital repayment) indicates that, in 1984-85, net MHSC payments to hospitals with 60 beds or fewer averaged $50,000 per bed annually while net payments to larger hospitals (those 125 beds or greater) averaged $88,000. Payments to teaching hospitals were highest, $154,000 per bed. Just as stays in some types of hospitals clearly cost less than do stays in other types of hospitals, days which occur in the latter part of a very long hospital stay are almost always less resource-intensive. Such stays usually include a substantial amount of custodial care.

Although elderly individuals are hospitalized more frequently than the non-elderly, Table 3-7 shows that their hospital days (particularly those of very elderly persons) are much more likely to be spent in small hospitals and in long, at least partly custodial, stays of 31 or more days than are the days in hospital spent by younger persons. Only 17.6 per cent of the hospital days used by the very old are spent in teaching hospitals (over half of them are spent in small rural hospitals). Fully 57.5 per cent of the days spent in hospital by the very elderly are in lengthy, 31 or more day stays.

Table 3-7

Characteristics of Hospital Stays Over a Two-Year Period, Proportions of Days in Different Types of Hospitals and in Stays of Differing Lengths, by Age Group, 1974-76

	Age		
	25-64	65-84	85 and over
	(Per cent)		
Type of hospital			
Teaching	38.9	34.1	17.6
Other large hospital (100+ beds)	38.6	31.6	26.7
Small hospital	22.5	34.5	55.8
Length of stay			
1-6 days	22.8	8.0	5.1
7-30 days	53.0	46.0	37.4
31 days or more	24.2	46.1	57.5
Number of individuals	3,255	2,940	386

NOTE Individuals are excluded from this table and from Tables 3-8 to 3-11, if any of their hospitalizations were in extended treatment hospitals or out-of-province.

Utilization Before Death

Dying is a major contributor to the high utilization of hospitals by the elderly (and others).The data in Table 3-8 are taken from representative samples of the province's adult population. As can be seen from the far left column, which includes survivors only, hospital day use increases with age. Individuals aged 25 to 64 average 1.3 days of hospitalization per year while those 85 years and over average 6.8 days of hospitalization per year. The four columns to the right identify hospital usage in the four years before death for individuals in the different age groups. These data provide three important insights: 1) usage of individuals even when four years away from death is higher than individuals in the general population. The contrast is greatest in the non-elderly age group. Individuals aged 25 to 64 in the general population (no deaths) average 1.3 days of hospitalization per year compared with 6.0 days per year used by this age group in the fourth year before their death; 2) the most dramatic increase in hospital consumption of decedents occurs during their last year of life. Usage, although higher than that of survivors, is basically stable during the fourth, third, and second year prior to death. However, in the year before death, the hospital utilization of all age groups

Table 3-8

Hospital Usage (Mean Days per Year) in the Four Years Before Death and in a Group Which Included No Deaths

	Individuals with no deaths	Number of years before death			
		4	3	2	1
Age of individual:[1]					
25-64	1.3	6.0	7.6	7.6	23.5
65-84	3.8	7.1	9.4	10.6	32.0
85 and over	6.8	9.5	9.9	8.1	24.4

[1] Age for those with no deaths is age in 1974; age for those who died is age at time of death in 1975 or 1976. Usage is reported for 1974-75 for individuals with no deaths (before July 1976). Numbers in each group by age were as follows: no deaths 25-64 – 3,218; 65-84 – 2,689; 85 and over – 276; deaths 25-64 – 285; 65-84 – 2,067; 85 and over – 1,261.

increases from 7.6 days to 23.5 days for the non-elderly group, and from 8.1 to 24.4 days for the very old; and 3) impending death substantially reduces the difference in hospital day consumption of the three age groups. Thus, although aging per se is associated with an increased use of hospitals (from 1.3 days to 6.8 days), there is not much difference between the mean number of days used by young and old decedents in the years prior to death. In fact, the mean number of hospital days used by the 25-64 year olds and the elderly over age 85 in the last 12 months before death is remarkably similar (23.5 and 24.4 days, respectively).

Whose Demand?

Factors other than patient need influence the probability that an individual will be hospitalized. Andersen (1968) and subsequent users of his model have studied the relationship of enabling factors (e.g., income, insurance, and community resources), predisposing factors (including age, social class, and race) and need to health care use. They have consistently found that need is the most important determinant of hospitalization as well as other types of health care utilization.

However, Wennberg (1985) has observed that such studies typically investigate the determinants of utilization without regard to the local market context in which services are delivered. Studies of variations in hospitalization rates across small areas point to the importance of supply characteristics, i.e., hospital bed availability and physician practice style, in explaining marked differences in hospitalization patterns (Wennberg et al. 1982; Vayda et al. 1984; Roos 1984). Vayda's work in Ontario and our work in Manitoba confirm that patterns of consumption of health care services differ markedly as one moves from one small area to another within the same province.

In the early 1960s, Roemer (1961, p. 36) was among the first to note the relationship between the number of available hospital beds and bed use. In Manitoba, the mean number of hospital days per person aged 25 or more ranges from 3.0 in the low bed areas to 5.2 in the high bed availability areas (Table 3-9). These patterns are even stronger for the very elderly with usage ranging from 10.8 days (over a two-year period) in the low-bedded areas to 25.2 days in the bed-rich areas.

Physician practice style appears to be another major factor, independent of medical need, which affects the amount of time the elderly spent in hospital. While persons under age 65 were somewhat less affected by physician practice style, the elderly whose primary physician scored in the highest quartile of the hospitalization index (most hospitalization prone) spent more time in hospital than elderly patients of physicians with lower scores on the hospitalization index (Table 3-10). Thus the very elderly patients of physicians scoring in the highest quartile averaged 21.0 days in hospital over a two-year period, compared with 13.6 days for their counterparts seeing physicians who scored medium-low on the hospitalization index. (All analyses to date suggest that patients of all but physicians scoring in the lowest quartile were similar on numerous measures of health status. Patients of physicians in the lowest quartile appeared to be somewhat healthier.)

Our data undoubtedly underestimate the relationship between physician practice style and hospital usage by elderly patients. The small area variation literature suggests that practice style is best reflected in varying

Table 3-9

Hospital Usage (Mean Days Over a Two-Year Period) by Individuals According to Availability of Hospital Beds in Area of Residence, 1972-74

	Number of hospital beds per 1,000 residents		
	Less than 5 beds per 1,000	5-7.9 beds per 1,000	8 or more beds per 1,000
Age of individual:			
All aged 25 years and over	3.0	3.9	5.2
25-64	2.2	2.3	3.5
65-84	7.0	8.6	9.4
85 and over	10.8	20.3	25.2

Table 3-10

Hospital Usage (Mean Days Over a Two-Year Period) by Individuals According to Their Primary Physicians Quartile Rank on Case-Mix Adjusted Index of Hospital Proneness, 1972-74

	Patient's primary physician classified according to quartile rank			
	Lowest quartile	Medium-low	Medium-high	Highest quartile
Age of individual:				
All aged 25 years and over	2.3	3.3	3.1	4.7
25-64	2.0	2.3	2.0	3.0
65-84	4.1	5.7	6.1	10.2
85 and over	6.1	13.6	17.4	21.0

hospitalization rates for specific conditions. Thus, while two areas may have similar overall hospitalization rates (the focus of our measure), these rates may be produced by very differing hospitalization patterns; in one area high hospitalization rates may be related to high rates of prostate surgery, while in another area, high hospitalization rates may be influenced by frequent hospitalizations for respiratory disease.

The impact of any factor on the limited resources of our health care system is related to how strongly this factor influences health care usage and how widely this factor is distributed throughout the health care system. Table 3-11 suggests that so much attention has been focused on very elderly patients because of the high hospitalization rate of this group compared with individuals of any other age (those 85 years and over average 14.9 days in hospital compared with 3.2 days averaged by everyone else). However, given the relatively few individuals who reach this age (estimated to be 4,666[2] in Manitoba in 1974), their total impact on the health care system (in terms of bed days utilized) is less than the impact of patients of hospital-prone physicians or residents of bed-rich areas. Thus, although patients of hospital-prone physicians use only 62 per cent more hospital days than patients of less prone physicians (4.7 days versus 2.9 days) approximately one-quarter of the adult population is cared for by these physicians (by definition, i.e., the highest quartile). Any increase in this hospital-intensive practice style will have a more significant impact on the health care system than will changes in the numbers of very elderly.

Discussion

Currently, health policy makers and planners are under increasing pressure to contain health care costs. Hospital care is the most expensive health care service and consumes a majority of our health care dollars. Therefore, much attention is being focused on ways to limit the number of hospital beds and to make the best use of existing acute-bed resources. In consequence, decision makers need to understand and to take account of the factors affecting hospital use, especially by the fastest growing segment of the population, the elderly.

Need is acknowledged to be a major contributor to utilization and elderly hospitalized patients can be expected to recover somewhat more slowly from acute episodes of illness than younger persons. However, this study uses several rather gross indicators to highlight some characteristics of service consumers and providers which have important implications for health care policy.

The elderly who are high hospital users are a very small group, whose number is even smaller when decedents are considered separately. Alternate and less costly programs, targeted at aged survivors who spend a long time in hospital, might produce a high payoff. However, the size of this payoff might be smaller than expected for three reasons. First, long hospitalizations occur most often in small hospitals where bed availability is not a problem and where costs are comparatively low. Second, long stays of the elderly involve mostly custodial, rather than resource-intensive, services. For example, recent findings in regards to patients hospitalized for atherosclerosis of coronary arteries indicate that the elderly, especially those aged 80 or more, generally stay longer in hospital but undergo fewer procedures than younger persons (Garnick and Short 1985). Thirdly, alternate custodial care in another type of facility or at home may not be cheaper for the hospitalized aged who live alone if they need 24-hour supervision or care. Nevertheless, the payoff could still be

Table 3-11

Comparing Relative Hospital Usage by the Very Elderly with Usage of Patients of Hospital-Prone Physicians, and with Usage of Patients Resident in Bed-Rich Areas

	Mean hospital days used over two-year period (1972-74)	Number of individuals in group[1]	Total days consumed by group
Age			
85 and over	14.9	4,666	69,520
25-84	3.2	334,174	1,069,358
Patients of physicians with different practice styles			
Most hospital prone	4.7	74,375	349,562
Less hospital prone	2.9	272,178	789,316
Beds available in area			
8 or more per 1,000	5.4	24,980	134,891
5-7.9 per 1,000	4.1	54,803	224,694
Less than 5 per 1,000	3.0	254,888	764,665

[1] For this table the sample has been reweighted to reflect results in the total population. The actual numbers in the sample were as follows: age 85+ older/others = 204/4,630; hospital prone/others 1,301/3,533; 8+ beds/5-7.9/fewer = 470/996/3,290. Individuals were excluded from the entire table if their primary physician had a small practice (was "expected" to hospitalize 15 or fewer patients), or if any of the person-days were spent in an extended treatment hospital or out-of-province.

substantial, particularly in areas with a relatively low bed supply.

Aging per se increases hospital use, but impending death is a far greater contributor to usage, most dramatically in the last year of life. This is true for all adults regardless of age. Thus, while services targeted on high-use elderly survivors might reduce costs, alternate and less expensive ways of providing terminal care to all adults could result in a particularly high payoff, especially if provided in the year of death.

Unfortunately little is known about either elderly survivors who consume many hospital days or about non-elderly and elderly decedents who consume even more days (Lubitz and Prihoda 1984). Programs cannot be targeted effectively without this information. Are the illnesses of these elderly survivors so complex, so difficult to treat, or so different from those of other elderly that they must remain in hospital, or be transferred to another heavy care facility? Are their social circumstances (e.g., living arrangement) the primary reason which prevents or delays their return home? Is their health so precarious that they recover much more slowly than their peers?

As far as decedents are concerned, the primary problem is that many patients who die are not clearly terminally ill (Scitovsky 1985). Moreover, for those who are predictively terminally ill (for example, lung cancer patients), studies thus far indicate that hospice care, available in some places primarily for non-elderly adults, is not less expensive than hospital care (Kane et al. 1984). However, the Health Care Financing Administration in the United States is currently funding projects which will more systematically compare costs and benefits. Maybe these and other studies will help us find out why some decedents use so many hospital days and what services they receive in hospital. We also need to address questions such as: Do the hospital services required by elderly decedents differ from those of non-elderly? Do the very elderly need different services than younger elderly? Since the non-elderly adult population is larger than the elderly population, where would it be best to reallocate resources if choices must be made? Research to investigate these and related questions is an essential prerequisite to making policy and planning decisions about alternatives to hospital care.

However, the absolute increase in the numbers of very elderly persons should not divert policy makers' attention from other important features of health care use by elderly individuals. Hospital beds, when available, are likely to be used. However, closing low-cost small hospitals is not necessarily a preferred solution unless pressures for expanding larger, more expensive hospitals can be avoided. Thus, Shepard (1983) has examined the system-wide implications of closing a low occupancy hospital in Massachusetts. Since the average costs at that hospital were low and many of the patients subsequently were expected to go to expensive teaching hospitals, a small increase in the area's annual inpatient costs was projected.

Finally, physicians decide who enters the hospital. Therefore, how they practice medicine has a major influence on hospital use patterns of elderly patients. In part, the physicians' hospitalization style reflects the elasticity of the hospital bed supply.[3] However, the practice style measures controls for case-mix; there are no data to suggest that high hospital usage practice styles are related to favourable patient outcomes. Because of the high risk of hospital acquired infections and falls in the hospitalized elderly patient, quite the opposite may be true (Gillick et al. 1982).

These practice styles may well reflect professional uncertainty in diagnosing illness and in prescribing appropriate treatment (Wennberg et al. 1982; Garber et al. 1984). Such uncertainties may be even more difficult to resolve in caring for the elderly who are likely to have multiple pathologies. The reasons why physicians differ in their hospitalization style are unclear. However, the impact of hospitalization-prone physicians on hospital day use is likely greater than the impact of the very elderly on hospital use because of the relative numbers of these two groups. For example, using the data from Table 3-11, a 10 per cent increase in the numbers of the very elderly might lead to increased "need" of approximately 6,952 hospital days, while a 10 per cent increase in physicians who are hospital prone would result in increased "need" of 34,956 days. Similar observations can be made about increased bed availability.

Just as demographers have projected increases in the very elderly cohort, health economists have long warned of the utilization effects of continued growth in the supply of Canadian physicians. If physician supply in Manitoba were to increase 10 per cent and physicians were to continue to hospitalize patients at approximately the same rate as they did prior to this increase (two very plausible assumptions), there would be an increased "need" for 113,888 hospital days. Roch et al. (1985) have recently demonstrated just this combination of increased supply and a service-intensive practice style have had a major impact on health care expenditures in Manitoba.

Efforts must be targeted first towards controlling physician supply, and then towards investigating why some physicians hospitalize their patients so much more than others. Since rates of admission, not lengths of stay, were most strongly associated with a hospital-prone style, active admission review committees in hospitals, especially in those located in areas with low bed/population ratios, might help to address the problem (Greene 1984).

In summary, while elderly patients are hospitalized more frequently and stay longer in hospital than younger adults, the true cost implications of the elderly population's use of hospitals have been overemphasized. This overemphasis seems to have diverted the attention of health policy makers and planners from other key factors (physician supply, bed availability, and physician practice style) affecting the use of our highest cost services (i.e., hospitals). The increased numbers of elderly do not inevitably create an increased "need" for hospital beds. However, if physician supply continues to grow, it is inevitable that this increase will produce a perceived "need" for expanding the hospital system.

Floor Discussion

Question: *Could you comment on housing – that is, social housing and shelter housing – as a major factor limiting the demand and supply of health resources?*

Answer: A quick response is that it is very important. For those of you who don't know what shelter housing is, it is housing for the elderly that provides warden visits, some home care services, and an alarm system in case of need. Keeping elderly people within the social sector, as opposed to the medical-treatment sector, can lower costs even when the services are very labour-intensive.

Question: *According to some reports, a considerable number of elderly in Britain die of hypothermia at home every winter. Do the low rates of institutionalization and rather high mortality rate in Britain reflect neglect?*

Answer: The actual number of people who die from hypothermia is very small, but it is nevertheless a problem that shouldn't be minimized. It is significant, however, that innovative forms of care are being provided through "need-centred" policies. They meet the needs of elderly people more closely than long-term care in the hospital sector.

Question: *Was the forecast wrong, that as diseases of old age are brought under control, 80 or 90 years will be the ultimate life span, and the period of morbidity will be compressed into the last few years?*

Answer: We are starting to approach those figures. But there seems to be a lot of mileage left, and we shouldn't give up on lengthening the life span. In terms of compressing the period of morbidity, we must accept that it is not going to happen magically. A lot of disabilities generated by the aging process – e.g., arthritis – are not directly related to dying, and it's going to take some effort to manage them.

Question: *When the elderly patients of hospital-prone physicians stay longer in small hospitals, is that an example of neglect or of better care?*

Answer: There is really nothing in the literature to suggest that a hospital-prone style of practice is good for the elderly, particularly those who become disoriented when removed from their familiar surroundings. We need to deal with the hospitalization needs of the elderly. The "bed-blocking image" of the elderly in teaching hospitals creates a very bad atmosphere and, as such, is a problem that needs to be addressed.

In the United States, research is just beginning on the appropriate treatment for a particular disease at a given "patient-age." If you look at treatment patterns for certain types of cancer, the age of 70 is magical. The incidence of treatment at that age drops to one-half. It is hard to believe that the need for treatment sharply declines at age 70. Some of the diseases are not the natural consequence of aging, and it may well be that there should be more acute-care services delivered at later ages.

Question: *In designing an effective strategy for care of the elderly, the choice is between community-based care by family members and institutionalization. What sorts of financial incentives could be provided to avoid overinstitutionalization or excessive control by hospital-prone physicians?*

Answer: Hospital-proneness tends to come from two different directions. One is the tendency for some physicians to perform surgical procedures on an inpatient basis that could have been performed on an outpatient basis. The other is that physicians clearly disagree on which treatments are effective and what risks are associated with them. We need to know more about this and diffuse our knowledge more effectively throughout the community.

The British answer to that question is an institutional division between care and treatment. Most of the social services provide support for informal care, to ensure that family care is not exploited by the formal sector. Physicians are vital, but they are not the centerpiece of that interweaving of informal and formal services.

It is pretty clear that if you have a significant reduction in informal care, you are not going to be able to provide formal services at the same cost. You need to provide effective incentives – perhaps tax incentives – for informal care. Reimbursement strategies can be powerful incentives, especially if they are combined with prognostic indicators and designed to improve the efficiency of service. In the United States, we've seen that the new DRG (diagnosis-related grouping) reimbursement strategy has reduced both the length of stay and hospitalization rates dramatically. The first round has generated some efficiency. To squeeze the hospital system even more, however, could cause quality-of-care problems.

One of the best examples of the lack of provision of care to the elderly in England is an institutional policy of not giving hemodialysis to people with renal failure at age 55 or over. Those decisions are being made by hospital doctors and not by community doctors. Allowing people to die is a form of rationing hospital services.

If people were trained to think in terms of community-based rather than hospital-based solutions, it would encourage the elderly to remain in their homes and receive suitable treatment there rather than enter institutions.

Question: *We've got a fairly consistent message from just about everybody – except maybe Ken Manton – that the elderly in future will require not so much medical care as social services. Isn't the underlying problem one of a surplus of physicians, and is there no other future strategy but confrontation?*

Answer: There is a danger in stereotyping the medical profession as one implacably opposed to community-based solutions. They are not. In the Netherlands, medical and social services are well integrated. If Canada is beginning to develop a new geriatrics profession, this is an ideal time to determine the orientation that the profession might take.

It is doubtful that you are going to see large numbers of physicians out on the street, but there could be considerable downward pressure on incomes and salaries, especially if you opt for health care maintenance organizations.

Also there are large numbers of elderly people in both this country and the United States who would benefit greatly from careful examinations by physicians.

We still have to experiment in this area. We need to determine whether the focus of the incentive system should be on the doctors or the institutions. We in the United States have opted for the institutional incentive system, and we may have to pay a price for having done so.

Question: *Dr. Roos's data show that the elderly in Manitoba receive long-term care under the acute-care system in rural Manitoba. Dr. Walker has told us that community care is indeed efficient if performed properly. The U.S. experience shows that this kind of care is rarely provided in a cost-effective manner. Are we missing something here, or is it not realistic to look at cost-effectiveness in substituting community for institutional care?*

Answer: Certainly the United States has a problem in that the elderly can't be moved out of acute-care hospitals into community care because equitable insurance arrangements are not available.

In Manitoba the introduction of a universal insurance program some 14 years ago seems to have solved that problem. Yet the newspapers remain full of concern about bed blocking in acute-care hospitals. If anything, the situation seems to be getting worse. In a recent study, it was concluded that Manitoba's nursing home program really increases costs. Acute hospital usage in Manitoba is not lower but in fact higher than in many other provinces of Canada.

That finding differs from the experience in Britain, where the evidence suggests that precisely that sort of substitution makes for lower total costs. Since resources were restricted through the national health service, and services simply were not provided by the public sector, there has been a burgeoning of private nursing homes. There is a growing body of evidence to show that a community package of residential care will substitute directly for institutional care. One of the initiatives in Sheffield has been the development of social services specifically designed to keep elderly people out of institutions as long as they want to stay out.

Nevertheless, it ought to be stressed that we should shift our focus somewhat from cost-effectiveness to care-effectiveness. Whether our health resources are going to be spent in traditional ways or redirected, however, remains a political issue.

4 Alternative Modes for Health Care Delivery

Duncan Robertson

Introduction

We have but a few years to plan and to implement humane, effective, and affordable systems of care which will address the multifacetted needs of an aging population. While many other "developed" nations have greater numbers and higher proportions of elderly citizens than we, growth of the elderly and in particular of the very elderly in Canada is occurring more rapidly. The impact of increasing numbers of elderly citizens on health care systems ill-prepared to address their needs is all too well known – long waiting lists for long-term care (LTC) facilities and a "backup" of patients awaiting transfer to LTC in acute-care hospitals.

These are, however, but symptoms and to treat any malaise symptomatically in medicine as in health care planning, is to temporize while the situation resolves itself or to palliate while awaiting the inevitable demise. A radical approach requires knowledge of causation and of the ways in which various system components interact. It is here that we must depart from the analogy between clinical medicine and health care planning, for interventions in medicine only rarely effect radical reconstruction of elements of the system and their interaction, whereas in health care planning more drastic changes are at least theoretically possible.

In the past, Canadian health care systems have relied heavily on inpatient institutional programs to meet the needs of dependent elders; however we must now face the demographic imperative with limited resources and this forces us to examine critically the way in which we meet these needs. A necessary first step is to review the burden of disability in the elderly population.

Epidemilogy of Disability

Impairments of physical and mental health find their clinical expression in signs and symptoms of organ system dysfunction and in disability. The Canada Health Survey (1981), in common with other community surveys of disability, found that the elderly have more days of disability (35 days per person per annum compared with 15 days for those aged 15-64 years). Reported days of disability may not fully reflect the extent of disablement of the elderly since the demands placed on citizens in their post-retirement years are reduced and role expectations are lower.

Disability sufficiently severe to require assistance to perform the activities required for everyday living serves as a more meaningful index of health status for the elderly. Lack of ability to perform independently any of these essential activities leads to dependence on others. Where these dependency needs can be met in the community by formal or informal care givers, community care is possible. When dependency for these essential activities – such as dressing, bathing, eating and toileting – cannot be met in the community, then urgent admission either to a long-term care facility, or to an acute-care hospital is usually required.

U.S. data on the number of community living elderly in need of assistance with activities of daily living show that less than 3 per cent of the elderly under 75 years of age need assistance in dressing, bathing, eating and toileting. However in two subsequent age groups, 75-84 and 85 and above, the proportion of the population requiring assistance increases considerably. In the community living group aged 85 and over, 18 per cent required assistance in dressing, 11 per cent in bathing, 7 per cent in toileting and 4 per cent in eating.[1] A Canadian study of health status of elderly living at home found that 2.6 per cent were dependent for bathing, 1.4 per cent for dressing, 0.4 per cent for eating, and 0.5 per cent for toileting. Those requiring help with any one or more of the personal care activities (transferring, dressing, using the toilet, eating, grooming, hygiene) comprise 3.9 per cent of the non-institutionalized elderly population of Saskatchewan. If, to this number is added those dependent on others for meal preparation, housework, and managing finances because they do not normally carry out this task, then slightly more than 19 per cent of elderly persons living at home receive assistance with at least one of the activities of daily living. In the same study, the proportion of persons receiving assistance with at least one activity increased from 13.2 per cent in the young old (65-75) to 24.5 per cent in the age group 75-84, and to over 50 per cent in the over 85s. No significant differences were found between the sexes (Stolee et al. 1982).

To translate community surveys of disability into need for health and social services, data on the availability of informal care givers and formal support services is needed. It is widely recognized that the number of elderly residents of long-term care facilities form but a small part of the group of elderly in need of services.

Hospital and long-term care facility utilization data as a proxy for health status provides an incomplete picture and yet multimillion dollar decisions may be made on the basis of current utilization patterns. Prolonged hospital stay of elderly patients may be occasioned not only by medical need but also by lengthy, slowly moving waiting lists for long-term care facilities. These waiting lists may not truly reflect community need since patients may be admitted inappropriately with potentially remediable health problems or prematurely when options for community care have not been fully exercised. Brocklehurst et al. (1978) found by medical screening of 100 old people making application for residential long-term care, that unreported treatable illness was frequent and that non-institutional options could be found for 16 per cent.

Much publicized long waiting lists for nursing home beds influence old people and their families to make application to several facilities years before actual need. The practice of elective admission to most nursing homes together with the need to maintain near 100 per cent occupancy precludes prompt response to community crises. Thus the emergency department of the acute-care hospital with its 24-hour response capacity is first to experience the effects of poor planning for the health and support needs of the elderly. In this paper a rationale for the development of alternative modes of caring for the elderly is presented and illustrated with results of studies from North America, the United Kingdom, and elsewhere, which have addressed the questions of efficacy and cost-effectiveness. Where appropriate reference will be made to relevant Canadian implementation practices.

A 1974 World Health Organization expert committee report on planning and organization of Geriatric Services, noted that in many countries geriatric services "still tend to develop on an ad hoc basis, sponsored by several bodies with little mutual consultation, co-ordination and co-operation" (WHO 1974). This continues to be the case in many parts of Canada in 1986 although there is increasing recognition of the need for co-ordination of services.

Numerous attempts have been made to identify those programs and services which impact upon the life and health of older people and how those programs and services may be integrated functionally. Many of these attempts have originated in Britain and have limited applicability to North American practice, however in a recent publication the U.S. Hospital Research and Educational Trust (1984) drew together in diagrammatic form institutional and housing services and ambulatory, outreach and home care services required to provide comprehensive care for older adults. Figure 4-1 is a reproduction from this publication. Case management and comprehensive geriatric assessment services form linkages between the services and will receive more detailed consideration later.

The range of medical and social support services that address the health, social and personal care needs of frail, chronically-ill and dependent elderly people constitute "long-term care" services. The term "long-term care" (LTC) is no longer restricted to facility care but "includes diagnostic, preventive, therapeutic, rehabilitative, supportive and maintenance services in both institutional and non-institutional settings" (American College of Physicians 1984).

The essential components of a long-term care system as identified by the U.S. Hospital Research and Educational Trust are acute care, primary care, facility care, home health care, and case management. In this paper these domains will be expanded somewhat: geriatric assessment will be discussed as part of acute care and geriatric rehabilitation, respite care and day programs will be discussed as part of an expanded role for LTC facilities. Different types of home health care will be reviewed and finally, some attention will be given to Canadian and U.S. experience with case management as a mechanism for co-ordinating and integrating care. Primary care and prevention are essential elements in long-term care systems but will receive no special consideration since they fall more naturally under the purview of other contributions to this workshop.

Acute-Care Hospitals

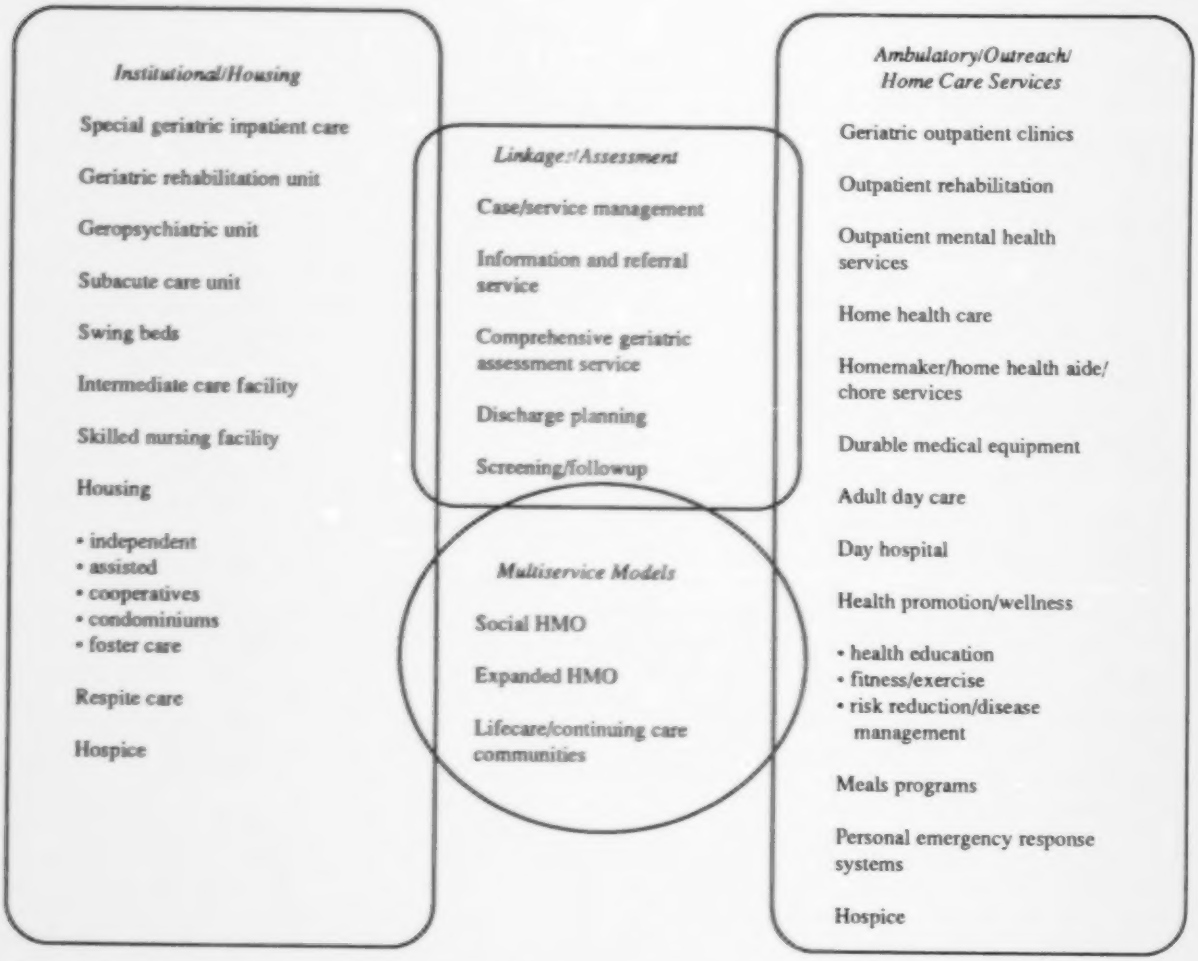
Responding to Realities and Innovative Health Care Planning

Health professionals specializing in health care of the elderly view the acute-care hospital as part of the system providing long-term care for the elderly but this perception is not always shared by the hospital

Figure 4-1

Services for Older Adults

Continuum of Acute and Long-Term Care Services


Institutional/Housing
Special geriatric inpatient care
Geriatric rehabilitation unit
Geropsychiatric unit
Subacute care unit
Swing beds
Intermediate care facility
Skilled nursing facility
Housing
• independent
• assisted
• cooperatives
• condominiums
• foster care
Respite care
Hospice
Linkages/Assessment
Case/service management
Information and referral service
Comprehensive geriatric assessment service
Discharge planning
Screening/followup
Multiservice Models
Social HMO
Expanded HMO
Lifecare/continuing care communities
Ambulatory/Outreach/ Home Care Services
Geriatric outpatient clinics
Outpatient rehabilitation
Outpatient mental health services
Home health care
Homemaker/home health aide/ chore services
Durable medical equipment
Adult day care
Day hospital
Health promotion/wellness
• health education
• fitness/exercise
• risk reduction/disease management
Meals programs
Personal emergency response systems
Hospice

SOURCE The U.S. Hospital Research and Educational Trust, *Long-Term Care Systems for the Elderly* (Chicago: HRET, 1984).

administration and other professionals. The provision of appropriate hospital care for increasing numbers of elderly patients, some of whom reside in acute-care hospitals while awaiting transfer to facilities providing long-term institutional care, is all too often seen as a problem with their mandate and responsibility.

In many parts of the United States and Canada the elderly account for half of all hospital bed-days. Disproportionate hospital utilization by the elderly results from both increased hospital participation rates and from longer hospital stays. Hospital participation rates of 50 per cent per annum for the population aged 75 and over are reported and average length of stay increases from less than 10 days for persons aged less than 40 years, to 20 days for those 65-75 years. Persons aged 75 and over, average length of stay of 27 days is reported for males and 36 days for females are reported (Stone and Fletcher 1980).

In a study commissioned by the CMA Task Force on the Allocation of Health Care Resources (1984), Woods Gordon produced a "status quo" projection, using projected changes in population and in age and sex structure with all other factors remaining constant. In this projection utilization of Canadian general and allied hospitals will increase 48.8 per cent in the period 1981-2001 and 89.1 per cent over the period 1981-2021. This translates in 1981 dollars, to an additional 7.1 billion in operating costs and 17.7 billion in additional cumulative capital costs by 2021.

Elderly people are admitted to acute-care hospitals for a variety of reasons. Some are admitted for elective procedures such as ophthamologic, urologic and orthopaedic surgery but the majority are admitted as emergencies for acute illness, injury or sudden decline in functional ability. Others are admitted when the burden of dependency caused by gradual erosion of self-care capacity can no longer be borne in the community. Since breakdown in community care giving is the most obvious presenting feature even for those who are acutely ill, older patients may be perceived, inappropriately, as "social admissions" and "placement problems." The "knee-jerk" response to ever increasing numbers of admissions of older people and the fear of blocked beds is to demand even more beds for long-term care. Responding to a complex and growing health care issue in this way will prove to be a short-lived and short-sighted symptomatic response.

While some younger chronically-ill or disabled patients present with problems similar to those of the elderly it is typically the very old – those 80 or 85 and over – who present most difficulty in arranging suitable discharge from hospital. Despite this many very old people have health care needs which may be met appropriately in acute hospitals with inpatient stays only a little longer than younger patients. In a study of hospital utilization in all acute-care hospitals in one Canadian city, Robertson and Rockwood (1982) found that over half all admissions of the over 85s were emergent and that admissions were approximately equally divided between medical and surgical cases. Overall the average length of stay was 19 days. While there was a high hospital mortality rate (13 per cent) of those patients aged 85 and over who were discharged to non-institutional settings, fewer than 10 per cent were admitted to a LTC facility within one year. Thus, after hospital admission stable community discharge can be achieved even for the very old.

There are, however, some older disabled patients who are admitted to hospital from facilities or from their homes who cannot easily be discharged. In the absence of appropriate alternative care they may remain in hospital for months or years and the appropriateness of the acute hospital environment for this type of care is questionable. Some Canadian hospitals have developed "transitional care" or pre-discharge units for patients awaiting placement, but even the best of these units may achieve only quality custodial or medical care. This is not surprising for the expertise of acute hospitals is in acute care. Administrators and professionals may be handicapped by "ageist" attitudes and by ignorance of what may be achieved with modern geriatric care. These limitations may be translated into inadequate or inappropriate provision for the elderly in acute-care hospitals when resource allocation decisions are made.

With or without appropriate provision for the needs of the elderly, hospitals find themselves dealing with older, more disabled patients – small wonder that one U.S. observer has stated, unchallenged, that "acute-care hospitals find themselves stumbling into long-term care with no clear strategy" (Campion et al. 1983).

One approach to reducing inappropriate hospital utilization is more effective and earlier discharge planning. Fisher and Zorzitto (1983) in discussing what has been called, often pejoratively, "bed blocking" or the "placement problem" stated that when hospital admission is necessary, discharge planning should be started immediately and improved functional ability through rehabilitation should be stressed throughout the patient's stay in the acute unit.

Another possible solution is the introduction of geriatric assessment into acute-care hospitals. Geriatric assessment or evaluation, that is, comprehensive diagnostic and functional assessment as a prelude to treatment, rehabilitation, service arrangement or facility placement has strong intuitive appeal since it facilitates more exact matching of needs with services at an individual case level and identifies need for service development at a community level. The principles of geriatric assessment have been applied in a number of settings including acute-care general wards, specialized inpatient units, free standing clinics and LTC facilities. Some published reports of geriatric assessment in acute-care facilities will be reviewed.

In one study of a geriatric assessment and consultation service in acute medical wards a 21 per cent decline in mean monthly census of elderly patients "backed up in acute-care hospitals" was reported. However impressive these results and however much they support our belief, we must note that patients were not randomly assigned to geriatric team intervention (Barker et al. 1985).

Geriatric assessment or evaluation units may operate in two ways: as "step-down" or post-acute units receiving most admission from acute-care wards; or as acute-assessment units admitting urgent and emergent patients directly from the community. Two clinical trials of U.S. geriatric assessment units operating in the latter fashion have been reported. In one study no difference in placement outcomes between elderly patients receiving GAU care versus standard medical care was found, however, the study design leaves questions unanswered (Teasdale et al. 1983). Post hoc matching rather than randomization was used to provide a control group and the authors provided no data on differences in functional status, mental status, and availability of social supports between the groups, factors which would almost certainly affect placement outcome.

In the only well designed randomized controlled clinical trial which has been published to date, admission to a Geriatric Evaluation Unit in a California Veterans' Hospital was found to improve functional status and morale, reduce mortality and discharges to nursing home and lower direct costs (Rubenstein et al. 1984). Several GAUs, typically 15-20 inpatient beds often associated with a Geriatric Day Hospital, operate similar programs in Canada. Descriptive reports of such units have been published (Health and Welfare 1977).

The centrality of comprehensive geriatric assessment was recognized in the recommendations of the World Assembly on Aging, one of which states that "an efficient assessment procedure is essential for prevention, diagnosis, treatment and rehabilitation" (National Advisory Council on Aging 1983). The exact nature of geriatric assessment programs depends on local circumstances, but whether based in clinic, community, general hospital, or LTC facility it represents a front-end investment early in a patient's long-term care career. By early identification of potentially remediable causes of ill-health, disability and dependence, and by appropriate treatment, rehabilitation and service arrangement, premature or inappropriate hospitalization or institutionalization may be avoided.

Application of the principles of modern geriatric care should not be restricted to small specialized geriatric assessment units. Referring to Britain where there is an extensive experience of geriatric services in acute-care hospitals, the British Geriatrics Society Brief to the World Assembly for Aging (1982) stated that "effective geriatric medical services in the general hospital promoted good treatment of the elderly in all hospital departments through formal consultation and liaison. providing examples of good practice in specialized wards for the elderly." A recent Canadian study of elderly LTC patients in acute-care hospitals proposes programs of education and training for hospital staff in the geriatric problems in order to improve acute hospital care of the elderly (Capital Regional Hospital District 1985).

This brief examination of the role of the hospital in the long-term care of frail, dependent elders has highlighted emergency admission to acute-care hospitals on a "final common pathway" by which many elders enter the long-term care system. In addition to in-hospital responses – discharge planning and geriatric assessment – examination of a community response service which could respond to geriatric crises as expeditiously as the hospital emergency department should be undertaken. In this way it may be possible to prevent acute hospital admission of some older patients. The deleterious effects of hospital admission on the older persons' functional abilities and on the stability of their support network would thus be avoided.

Facility Care

Expanding the Role of Facilities Providing Long-Term Care

Around 8 per cent of Canada's elderly and over 20 per cent of the very elderly are resident in institutions providing long-term care. There were in Canada, in 1981-82 over 57,000 approved long-term beds in hospital and around 150,000 approved beds in special care facilities for the aged.[2] The approximate institutionalization rate of 9 per cent in Canada is higher than figures reported in the United Kingdom and the United States. In this section of the paper, ways in which the role of LTC facilities may be expanded to minimize unnecessary permanent admission to facility care and thus ultimately the institutional rate will be discussed. They include geriatric rehabilitation, respite care and day programs.

Geriatric rehabilitation — Rehabilitation is now accepted as an essential part in the management of all illness in old age. The International Plan of Action on Aging noted that "without multidisciplinary rehabilitation medical success may not be accompanied by successful restoration of social and physical competence in the elderly" (WHO 1974). For some individuals – often younger, fitter individuals who are medically stable and without significant intellectual impairment – admission to existing rehabilitation facilities may be appropriate.

Frail, disabled, dependent elders who may be medically unstable and have some degree of intellectual impairment need the specialized approach of geriatric rehabilitation. Specialized rehabilitation of the elderly has several dimensions: reactivation – encouragement to live active daily life in familiar surroundings; resocialization – reestablishing contact with family, neighbours, friends and citizens; and reintegration – as full participation in normal life as illness and disability permits. Urgent examination of the possibility of redesigning some long-term care beds for geriatric rehabilitation should be undertaken.

There are a number of hurdles to be overcome if geriatric rehabilitation is to be incorporated into the care of elderly and in particular of very elderly patients. Hesse et al. (1984) identified attitudinal stumbling blocks to rehabilitation of the elderly. The most important stumbling block is the attitudes and beliefs held by families, patients and hospital staff which interfere with motivation for physical independence. If long-term care facilities are to provide post-acute rehabilitation of several weeks or months with the objective of discharge home, then the prerequisites for successful discharge – that is, a home to return to and community care-giving supports – must not be dismantled prematurely and inadvisedly when the patient is admitted to an acute care facility. Nor should the expectation that entry into a long-term care facility is permanent be transmitted to patient and family. The long-term care facility, which is typically admission rather than discharge oriented, must also adjust to a new *modus operandi* if rehabilitative care is to be introduced successfully.

Data from randomized controlled trials to support new directions in LTC are lacking. Some support for geriatric rehabilitation comes from studies of rehabilitation units for conditions such as stroke and many of the reported benefits from Geriatric Evaluation Units result from short-term rehabilitation after assessment. Full rehabilitation potential during the relatively short stay in the typical assessment unit may not be achieved. In one Canadian unit a mean length of stay of around 20 days was reported (Roberston et al.1982). Several weeks or months may be required before rehabilitation of frail, disabled, elderly people is complete and discharge home may be contemplated, thus continuation of rehabilitation in specially staffed and programmed LTC units offers potential for developing cost-effective care. Specialized geriatric rehabilitation units in LTC facilities would use beds which would otherwise be occupied by patients receiving permanent LTC. Additional operating costs would result from the enriched staffing needed to assist patients to achieve rehabilitative goals and to effect stable discharge home or to other less intensive facility care, but overall benefits could result from delaying or preventing entry to permanent facility care.

Respite care — There is an ever-growing literature on the burden experienced by community care givers of frail, disabled elders. DeLargy (1957) first described periodic readmission of disabled older people from the community. Griffiths and Cosin (1976) developed planned intermittent short-term hospital readmission (two or three days per month) to relieve the strain on family care givers of frail elders. A similar program has been described in a geriatric unit in a Canadian teaching hospital (Dunn et al. 1983).

In Manitoba, in 1980, approval was given for personal care homes to admit, for short periods of relief, elderly and dependent people who were cared for by their families in their homes. This service was seen as one more step in the continuum of care providing relief for families who could not otherwise have a vacation or break from the pressures of providing 24-hour care or supervision. In 1981-82, 4,000 respite days were provided in 23 beds in 19 facilities in Manitoba.

The current literature on respite care is descriptive and while we await more conclusive data on the efficacy of respite care in delaying institutional admission designation of some long-term care beds as swing beds, respite or holiday beds to provide families with a break from care giving has intuitive appeal.

Day Programs

Vehicles for Providing Health Care, Respite and Social Recreational Programs to Rebuild Self-Esteem and Sense of Competence

Senior adult day programs provide a range of services: social and recreational services in *senior activity centres* for relatively fit elders; *day centres*, which provide specialized social and recreational opportunities for mildly disabled elders together with respite for community care givers; *geriatric day hospitals*, which provide many of the diagnostic, assessment, treatment and rehabilitative services normally associated with inpatient hospital care. Day programs for the elderly are generally considered to be an essential component of the continuum of care.

Adult day care, focusing on social and recreational needs, is available in many parts of Canada. Programs may be freestanding or associated with LTC facilities. In the United States a cost comparison of day care and nursing home care found that, in 1978, per diem costs of adult day care and nursing home were comparable (adult day care median cost $21.32 per day, nursing home cost comparable reporting period $19.22). Since adult day care is intermittent while nursing home care is continuous, adult day care costs were about one-third those of nursing homes over one year ($2,771.60 for adult day care, $7,015.30 for nursing home based on participation rate of 2.5 days per week [Weissert 1978]).

In contrast to geriatric day care in which patients continue to attend for months or years, attendance at a geriatric day hospital is both intermittent and of relatively short duration. Typically, geriatric day hospitals divide attendees into those coming for assessment and those for treatment or rehabilitation. After several visits during which a team of health professionals completes diagnostic and functional assessments, a determination is made as to whether a patient needs to continue to attend to achieve specific treatment or rehabilitative goals. After a period of intermittent attendance of several weeks or months termination of attendance and referral to other community programs is affected.

There is an extensive literature, primarily from the United Kingdom, describing the establishment and function of geriatric day hospitals. Several have addressed the cost of geriatric day hospital treatment which closely approximates inpatient rehabilitation costs. Tucker et al. (1984) conducted a trial in which patients were randomly allocated to geriatric day hospital attendance and standard care, that is care in existing geriatric rehabilitation programs. In this study significant differences in ADL performance at six weeks but not at five months and sustained improvement in mood in day hospital attendees were found. When compared with standard care, day hospital rehabilitation costs were one-third greater than those of inpatient rehabilitation.

Geriatric day hospitals and psychogeriatric day hospitals have been developed in a number of cities in Canada. Most are attached to acute-care hospitals or to long-term care facilities, and many form part of the service base of academic departments of geriatric medicine. Few provide only rehabilitative care. Most provide a range of services: assessment, medical and nursing treatments and respite for care givers, as well as rehabilitation, thus evaluation of their function must include recognition of these elements of care. A descriptive report on seven years' experience of one Canadian Geriatric Day Hospital has been published (Fisher et al. 1981).

Since patterns of practice and routes to institutional care vary between and within countries, future Canadian studies of Day Hospitals should address questions regarding the efficacy and cost effectiveness of providing different types of programs. In Tucker's New Zealand study and in British Geriatrics Service, entry into most LTC beds is strictly under the control of the geriatrician, thus premature or inappropriate admission should be a rare occurrence. In Canada, where LTC entry is not controlled in this way, day hospital attendance for reasons other than rehabilitation may result in patient benefits and reduced service utilization.

Home Health Care

Alternative to Residential Care –
But for Whom?

Home care services are now available in many provinces in Canada and some of the data used to support home care program development is included in a review of the literature on home care in Canada to 1977 (CMA 1984). The CMA Task Force on the Allocation of Health Care Resources identified home nursing, meals-on-wheels, companions, home makers, home handymen, transportation and health maintenance services as major home care services (Health and Welfare 1977).

Any examination of the capacity of home care services to serve as alternatives to institutionalization or to reduce the rate of institutional admission must recognize that the needs of elderly patients and their families differ very greatly. It is possible that home care services may be both appropriate and possibly cost-effective as alternative forms of care for some but not for others.

For example: Consider a 67 year-old widow with disabling arthritis who cannot easily leave her home to go shopping but can manage most of her self-care within the home except for foot care and bathing. Such a patient would be an ideal candidate for demonstrating cost-effective day care. Even supposing that no family or friends were available to help, provision of a few hours of home care services per week could meet her needs and forestall premature facility admission. When her life expectancy of over 15 years is considered, cost-savings of postponing facility entry may be considerable.

In contrast: Consider an 84 year-old, frail, elderly woman with impaired memory and judgment which renders her liable to accidental injury, falls, malnutrition and vulnerable to financial abuse. If informal supporters were available to provide the supervision and surveillance made necessary by her disability, then limited provision of a day care, say, meals-on-wheels and intermittent physical care could assist the family to keep her at home at a cost lower than for facility care. If however, formal home care services were required to meet all her needs, which could include daytime supervision, then the costs of continuous or at least very frequent surveillance would be more costly than facility care.

By intervening in a crisis when the care-giving network is temporarily disrupted, home care even though perhaps as costly or even more costly than hospital or facility care, may be cost-effective, since informal care giving may resume after the crisis. Another effective use of home care is to supplement informal care by assisting with tasks that families find burdensome. These examples make it clear that no single package of services could possibly meet all the needs of the elderly and their care givers. Services, which include personal care, rehabilitation and health care services, must be tailored to individual circumstances and based upon assessed needs.

One long established Canadian home care program provides home rehabilitative care in addition to personal and nursing care. Hunt and Crichton (1977) reported that in a 16-year period over 2,000 individuals, primarily older persons, including some 750 with severe permanent disability, had received home care services. The service array included physical and occupational therapy, social worker visits, equipment loan, installation and maintenance as well as home nursing and house making services. Data are reported as cost comparisons between days of hospital or facility care and day care and are impressive. However for this type of patient, cost-effective home care is dependent on family care givers. Where no family is available or willing to share in care giving or when medical conditions are unstable, the authors found that hospital or facility based rehabilitation programs were more appropriate. In contrast to their findings, a recent U.S. study reported on the cost of co-ordinated community-based LTC which included personal care, health and rehabilitative services. Community-based long-term care, which it must be noted offered a wide range of professional and supportive services, was associated with only marginal savings (Skellie et al. 1982).

There have been two recent studies of intensive home nursing care. In one U.K. study the costs of intensive home nursing care services (21 hours a week) were compared with those for hospital care for patients with comparable disability. In only one-quarter of the cases were the costs of health care greater than those of hospital care (Gibbins et al. 1982). In another U.K. study direct costs for community care of 139 chronically-ill elders were equal to or greater than the average associated with residential hospital care (Opit 1977).

In summary, home health care, especially when it involves infrequent assistance to elderly persons and their care givers in personal care, may well reduce inappropriate or premature institutionalization of the elderly and chronically sick or disabled, and reduce costs. When frequent professional services are required for prolonged periods or when constant or prolonged attendance is necessary, home care may be more costly than institutional care. Given the deleterious effects of hospital admission and the costs of prolonged hospital stay while awaiting transfer to a LTC facility, it may be cost-effective to provide, for short periods, home care enriched to the point where costs exceed institutional or even hospital costs.

Case Management

Getting It All Together

The International Plan of Action on Aging stated that "co-ordination of social and health care services can be and should be carried out to improve efficiency and reduce costs" (National Advisory Council on Aging 1983).

In an unco-ordinated system of care each of the multiple agencies, service or group of services has its own eligibility requirements, its own assessment process, and its own service limitations. The services a client or patient receives may depend less on assessed needs than on the service array provided by the agency with whom contact is first made. Case management can facilitate appropriate utilization of community support and facility services.

Successful case management rests upon the activity of an individual who has both the skills and the authority to co-ordinate the activities of professionals and agencies who provide programs and services for the elderly. Co-ordinated community care of frail elderly persons may involve the primary care provider, specialized geriatric services, home care and respite services, acute-care hospitals, and long-term care facilities. Thus, in addition to having knowledge of community resources and the interest and aptitude to bring these resources together in individual cases, the case manager needs to display sensitivity and skills if autonomous professionals and agencies are not to feel alienated or manipulated. Case management could be a function of the primary care provider or of a specialized geriatric service; however, in this case service is limited to those who are referred. Some provinces, notably British Columbia and Manitoba, have identified geographical catchment areas and have developed a single entry point to home care and long-term care services. In this way entry into all government-funded health and social services in defined catchment areas depends on evaluation of eligibility and need made by assessors – usually public health nurses or social workers. Although heavy case loads may reduce the capacity of a person to fully realize their potential as case managers, as described, their role as co-ordinators of care deserves further examination.

If specialized programs and services – geriatric assessment units, day program, home health care, and respite program – are to operate effectively it is essential that appropriate patients are referred at a time when intervention may be beneficial and that available supportive services operate collaboratively for the attainment of therapeutic, rehabilitative or management goals. Workload permitting, the assessors may act as case managers by facilitating patient-flow and in this way co-ordinate and expedite discharge from hospitals and entry and exit from assessment units and rehabilitation centres.

While case management is incorporated into the LTC plans in Manitoba and British Columbia, the process has not been evaluated for cost effectiveness in Canada. A single entry/single assessment and service arrangement system for the elderly in the United States found service utilization and costs were greater when compared with a non-randomly selected comparison group (Hicks et al. 1981). Despite the lack of support from experimental studies for the cost effectiveness of care management it makes good clinical sense and, like geriatric assessment, it is central to the provision of appropriate care for frail and dependent elderly people in the community.

Conclusion

At the turn of this century Canada's premier physician and medical educator, Sir William Osler, said "Humanity has but three great enemies: fever, famine and war; of these, the greatest, by far the most terrible is fever." How dated this sounds to our ears only 80 years later. In the western world the abundance of food, relative freedom from violent accidental death, separation of water supply from sanitation and marked reduction in infections which formerly killed in their first decade one-quarter of all those born, has resulted in a dramatic increase in mean life expectancy. Not only are more people living into old age but they are entering old age better nourished, better educated, and often in better health, few having experienced major life threatening illness. In contrast to earlier times when the experience of morbidity and mortality was spread across the life span, the burden of sickness and disability now falls disproportionately on the elderly. The result of more widespread adoption of health lifestyles may be to further delay the clinical expression of chronic degenerative disorders until the eighth or ninth decade of life.

In the last few years of life, age-associated decremental biologic changes, together with disease states and the effects of physical deconditioning combine to erode the capacity for performance of the activities required for independent daily living. An older person disabled in this way requires the assistance of others either for personal care, or for safety and surveillance or for specific health care interventions. These vital supportive and health care services may be provided in a variety of settings ranging from the person's own home to hospitals or facilities providing long-term care. The optimal location of care is influenced by a number of factors including the nature and severity of illness or disability, the type, mix, and intensity of services needed, and the availability and willingness of family or other care givers to provide care.

Financial incentives and disincentives influence selection of care options. With around 9 per cent of elderly Canadians in institutional care, many believe that financial incentives in Canada have favoured selection of institutional options but other factors such as geography, climate, availability of community care givers, and public expectations also impact on high rates of institutionalization.

Those promoting alternatives to institutional care have often done so by emphasizing cost advantages of community care. In this brief review of the limited data available to support alternative care options, we have seen that comprehensive geriatric assessment, both diagnostic and functional, is critical in any long-term care system since inappropriate or premature institutional admission may be prevented, remediable conditions may be detected and treated, and appropriate matches may be made between needs and services. The advantages of a single entry/single assessment system for all community and facility based long-term care services and the potential advantages of case management of dependent elders have been recognized by U.S. observers of the Canadian LTC scene (Kane and Kane 1985*b*).

Senior adult day programs and home care services may prove cost-effective by stabilizing community placement and by delaying or preventing facility admission of some elderly persons. However, such services should not be used indiscriminately for individuals who would be more appropriately cared for in a facility or hospital. It is possible to maintain even severely disabled and dependent elderly people at home for prolonged periods, but to do so often places a heavy burden on their care givers. Respite care, day care, and formal home care service may reduce the burden but at some point informal supports may break down and cost-effective home care may need to be abandoned in favour of permanent facility care.

From the United Kingdom, where there is considerable experience in home care, a cautionary note has been sounded about the supposed economic advantage of domiciliary care. Cost-savings compared with institutional care of the seriously disabled may depend on restricting services thus increasing the degree of neglect. To care for such persons at home "without neglect will require a large investment in support services and even then the quality of life for some of these patients and their families may be far from compatible with any civilized humanitarian standards" (Opit 1977)

"De-institutionalizing" the elderly does not imply discharge of more than a few existing LTC residents, rather it implies de-institutionalizing care by developing alternative methods for delivering health care to the elderly. The integrated function of a range of services, both community and facility based, is required to provide a continuum of care for the elderly. Congregate housing arrangements, day programs, geriatric assessment programs, acute-care hospitals, and home care constitute some of the elements of the service continuum. Innovative use of LTC facilities for respite care and geriatric rehabilitation may prevent or postpone permanent institutional admission; however when all community care options have been exhausted, facility based long-term care will probably be needed for at least 6 per cent of the elderly population. As the number of very elderly within the older population increases, it may be more meaningful to look at age-specific institutionalization rates. Few of the "young-old" need facility care, whereas 25-30 per cent of the "old-old" are currently in LTC facilities. Since population structures vary between and within provinces or regions, adoption of age-specific institutional entry rates may better serve to assess relative need for services and facilities and to evaluate the impact of innovative programs.

The near conquest of many of the causes of premature, avoidable death makes reasonable the expectation that most of those born now will survive to old age. This unprecedented survivorship to advanced age creates stress in our health care systems which only fundamental changes will allay. The data to support possible changes in the way we deliver health care to the elderly are incomplete yet; because of the urgency created by anticipated increased demands, we are not to be allowed the luxury of systematic introduction of interventions and programs of proven efficacy and demonstrated cost-effectiveness.

In our quest for cost-effective ways of meeting the challenge created by disability and dependence in the latter years of life, let us be guided by humanitarian principles not merely by cost considerations. It would be a tragic irony if, as a result of our recommendations and actions, we commit our elders, and ultimately ourselves, to lives of such poor quality that we are led to doubt the value of survivorship.

Greg L. Stoddart

By presenting and illustrating clinical, social, and economic dimensions of the rationale for development of alternative modes of caring for the elderly, Dr. Robertson lays important groundwork for our discussions about how best to organize and finance services for this increasingly important group of Canadians. Dr. Robertson's "alternative" modes are not mutually exclusive; rather, they form a spectrum of delivery styles, differing primarily in resource intensity, range of services offered, and degree of displacement or disruption of normal social activity. The broad components of the spectrum include prevention and primary care, facility care, home health care, and case management, each of which (but especially facility and home care) may be organized and delivered in several specific ways. As Dr. Robertson stresses, however, the real challenge is to develop and utilize the spectrum as a *system*, not as a set of independent players. The result is – or would be if we succeeded – like the difference in sound produced by a symphony orchestra being conducted, instead of tuning up. Each instrument in the long-term care system would play an essential, but integrated, balanced, and appropriate role available and utilized according to need.

This is not the system we have now. Nor will it be created overnight. Dr. Robertson identifies numerous priorities for development: introduction of geriatric assessment activities into acute-care hospitals, more provision of respite care and day programs, earlier discharge planning, better training in the handling of geriatric problems for hospital staff, evaluation of the feasibility of community services, redesignation of some long-term care beds for geriatric rehabilitation, and more careful matching of community-based services, including domiciliary care, to the actual needs of clients. He also identifies several obstacles to these developments. Two of the most important are what he calls the "ageist" attitudes frequently shown by administrators, health professionals, families and even patients themselves, and the lack of data from well-designed research studies upon which to base planning decisions.

Dr. Robertson draws attention, correctly I think, to the fact that the spectrum of long-term care facilities and services must be viewed as a system, and that planning or policy decisions must begin from this view. In the remarks which follow, I wish not only to continue this theme but to extend it in order to remind us that development of the long-term care system itself must be placed into the context of a larger health system. My remarks concern: i) planning from a crisis mentality; ii) the nature of cost-effectiveness information; and iii) one often neglected source of revenue for the development of long-term care. Although these subjects may appear unrelated, they share a common theme. The most difficult questions facing health policy makers are which needs will be met, and to what extent, i.e., what share of resources will be devoted to the care of the elderly vis-à-vis other groups? Alternative delivery modes, wisely deployed and utilized, can maximize the effectiveness of our resource commitment; unfortunately, both in long-term care and elsewhere the development of alternative modes will also make decisions about shares more difficult.

i) Both the opening and closing paragraphs of Dr. Robertson's paper communicate a sense of crisis which in itself warrants question and comment. "We have but a few years to plan and to implement humane, effective, and affordable systems of care ..." and "... because of the urgency created by anticipated increased demands we are not to be allowed the luxury of systematic introduction of interventions and programs of proven efficacy and demonstrated cost-effectiveness." How imminent is this crisis? What exactly are these demands? Who, or what factors, are responsible for them? And what alternative approach to the luxury denied us shall we be forced to use?

There may well be a crisis in the care of the elderly in Canada's future; however, it is important that we be as clear as possible about the nature of the predicted crisis. It is not that we will be inundated tomorrow by scores of suddenly elderly citizens. For many of us, we are they. And it is not the effects of demographic changes alone that threaten to bankrupt public or private purses. A considerable amount of research has been conducted on the impact of aging on health care costs, including research which simultaneously examines the impact of demographic changes on the overall economy (Lefebvre et al. 1979; Denton and Spencer 1975, 1983; Boulet and Grenier 1978; Stone and Fletcher 1980; Woods Gordon 1984; Schwenger and Gross 1981; Hertzman and Hayes 1985; R. G. Evans 1983*b*). Several conclusions can be drawn from the projections of these studies, and syntheses of them (R. G. Evans 1983*b*, 1985):

1) the impact of aging alone on health care use will occur slowly, over the next 50 years, with the significant effects beginning in two decades or so;

2) the major effect will be in the institutional services sector, where expenditures may be expected to increase about 1.5 to 2 per cent per year, contrasted to expected increases of about 0.3 per cent per capita for physician services; and

3) demographically generated increases in health care expenditure could be met by real economic growth of as low as 1 per cent and certainly by 2 per cent per year.

Lest these figures induce complacency, we should note that there *are* reasons for concern over the future cost of health care for the elderly. Even small percentages of large numbers represent significant resource commitments and thus merit our attention. Recent increases in life expectancies for Canadians mean that past projections of expenditures are somewhat conservative. (How significant the underestimate is remains to be seen.) Perhaps most important, however, the age-sex specific utilization rates of "traditional" services by the elderly, assumed constant in most projections, are in fact increasing, at the same time as the range of "alternative" services is expanding.

Herein lies the real nature of the predicted crisis (R. G. Evans 1983*b*). It is not the external demographic forces per se that are shaping the problem; rather, it is the way in which we as a society, largely but not exclusively through the health care system, choose to respond to these demographic changes that creates or reduces cost pressures. We may continue to *respond* by increasing the intensity with which the health care system services the elderly, even though the benefits of such increases are often marginal or dubious. We may continue, at what Evans terms the "extensive margin" of the health care system, to provide the elderly with significantly more assistance with daily life than they have received in the past, on the grounds that humanity requires it. What is important, however, is to realize that these are conscious choices that we have time to make sensitively. Whether the mechanisms for making such choices are adequate is another question, and one which will undoubtedly be discussed at the colloquium.

Planning from a crisis mentality (especially one in which the exclusive focus often is how to find more resources for health care) interferes with this decision process in important ways. It obscures the fact that all choices involve tradeoffs and reallocations, gainers and losers. Related to this, it also blurs two distinct questions – what share of resources ought to be devoted to the elderly? and how can maximum value be obtained from this share? – often, and unknowingly, deciding them together.

ii) Economic evaluation techniques, such as cost-effectiveness analysis, are the primary tools for investigating the latter question.[3] Yet, as currently used, the term "cost-effectiveness" may often in reality be addressing the former.

The statement that one specific delivery mode is cost-effective in comparison with another is perhaps one of the strongest endorsements that experts can confer. Yet, as Doubilet and his colleagues (1986) have noted, it can have several meanings. "Cost-effective" is often taken to be synonymous with "cost-saving" or "cost-saving, with an equal or better health outcome." But it may also be used to mean "having an additional benefit *worth* the additional cost." It appears that investigators in the studies reported by Dr. Robertson use it both ways, although the resource implications of decisions based on each usage are quite different.

Alternative delivery modes that truly generate cost-savings without any loss of effectiveness clearly improve the (technical) efficiency of the long-term care system. Unfortunately, such alternatives occur much less frequently than their advocates would have us believe, as both Dr. Robertson and other commentators have cautioned (Jonsson and Lindgren 1980; Weissert 1985). More often than not, new services or programs "cost more, but do more." Adoption of such alternatives may still improve the (allocative) efficiency of the overall health care system, but it is important to note that the adoption decision in this case represents a choice in favour of more long-term care services, less of something else. As Dr. Robertson emphasizes in his final paragraph, however, improved health or quality of life is a goal in itself, independent of the cost-savings which may accompany it. In fact, as a society we may consider increases in quality of life to be worth large additional net costs. Nevertheless, it is the responsibility of those who advocate, demonstrate, and evaluate alternative delivery modes to be clearer (and more honest) about the sense in which these modes are "cost-effective."

iii) On the assumption that some, if not most, new long-term care services will fail to "pay for themselves" by generating cost-savings elsewhere in the health care or social service systems, we could – and no doubt will – spend considerable time at the colloquium discussing the relative merits of potential sources of revenue, both public and private. My intent here is to underline one significant source of funding for long-term care that is often ignored, namely the elimination of ineffective and/or inefficient servicing and utilization patterns in the remainder of the health care system.

Just how far inside the efficiency frontier we are is an empirical question. No one has yet produced a carefully constructed aggregate estimate, though it seems increasingly important to do so. I believe that the distortion is very significant, given available evidence demonstrating that:

1) many services and procedures are not efficacious or, more often, are provided and utilized beyond efficacious levels or frequencies;

2) many efficacious services could be delivered at lower cost (without reduced effectiveness) through alternative procedures, personnel or settings; and

3) organizational models other than fee-for-service solo or small group practice, such as capitation-reimbursed groups and possibly community health centres, can reduce inefficient delivery and utilization patterns of the first two types (Stoddart 1985).

The set of policies that allows this evidence to remain largely ignored in the rest of the health care system offers a useful lesson for the organization of the long-term care sector. The Canadian health care system may be characterized as a system of financing without management, or more accurately, public financing with private management (Stoddart 1985). Provincial governments have adopted a "pay the bills" approach to the health insurance system, and have generally been reluctant to take any action that could be interpreted as "interference in the practice of medicine." They have concentrated cost control efforts – with good success until recently – on the restriction of physician fees, number of hospital beds and hospital budgets. They have not, however, taken an active regulatory role to ensure that knowledge of effectiveness – and efficiency-improving changes gets implemented. Nor have they adopted reimbursement mechanisms that reward efficient behaviour by providers, consequently relatively high-cost "styles" of practice continue to be the norm. The current policy approach does not appear to be tenable in the long run, and alternative health policy scenarios are more frequently discussed (Stoddart 1985; Bird and Fraser 1981; R. G. Evans 1984; Lomas 1986). The message for any developing sector of the health care system is clear: whether visible or invisible to the audience, a conductor is essential to an orchestra.

John M. Horne

Dr. Robertson's call for a "radical approach" to developing alternative methods of health care delivery for Canada's aging population (discussed at the beginning of this chapter) echoes the recent report of the Canadian Medical Association-sponsored Task Force on the Allocation of Health Care Resources (1984). Central to both statements is a concern with the current system's heavy reliance on inpatient institutional programs in responding to the needs of dependent elders, and a critique of this practice as ineffective, inefficient and inhumane. There is also a shared fear of prolonging the status quo in the face of projected pressures from limited resources and rapidly expanding numbers of elderly. As the Task Force warned, "if we continue to put old people in institutions at the rate we do now, the costs will not only be prohibitive, we will perpetuate the callous practice of 'warehousing' the elderly" (p. 37). It is further evident from his informative discussion of the essential elements of a superior long-term care system that Dr. Robertson generally agrees with the Task Force's position that "the thrust in the redirection of health care resources undeniably needs to be in the development of community services to keep the elderly out of institutions for as long as possible, not only to reduce costs, but to enhance the quality of life" (p. 18). In emphasizing the related requirements in health policy planning, Robertson's rejection of symptomatic solutions in favour of "radical reconstruction" recalls what the Task Force termed "the need to dramatically remodel the health care system" (p. xi).

The striking similarity of these assessments and prescriptions is suggestive of an emerging internal consensus that the existing system of long-term care is seriously, if not fatally, flawed and that fundamental reforms are necessary. Ironically, this comes at a time when well-informed external reviewers are praising the system for its humanity in gradually extending the principles of public universal insurance to long-term facility care and home care (Kane and Kane 1985*b*). Of course, there is room for improvement in any system and it should not surprise us that our own should draw its faintest praise and harshest criticism from "self-studies" of the sort represented by the Task Force and from professionals like Dr. Robertson with extensive "front-line" experience in geriatric medicine. What is cause for concern is that these internal reviewers confess in equal measure to deep disappointment with the present system and to profound pessimism about its prospects for positive performance in the coming decades.

Reinforcing their pessimism is a study commissioned by the Task Force entitled "Investigation of the Impact of Demographic Change on the Health Care System in Canada" (Woods Gordon 1984). Prepared by the management consultant firm of Woods Gordon, the study determined that if current patterns of providing care persist, projected population growth and aging will elevate annual expenditures on health care by $13.7 billion by the year 2021. Relative to the total health care bill (excluding capital costs) of $18.5 billion financed by all levels of government in 1981, this would represent an overall increase of 75 per cent and average annual spending growth of 1.4 per cent. The study further advised that the "major problem" would be the need for an additional 118,000 hospital beds and 276,000 long-term beds by 2021. To accomplish the former would require governments to "return to the buoyant construction level of the 1960s," while the latter would necessitate "unprecedented construction activity" (Woods Gordon 1984, p. 52). Together these bed-building programs would entail a cumulative capital expenditure of over $30 billion (in 1981 dollars) by 2021. Such projections could not fail to fuel the economic case against the status quo with its worrisome emphasis on "warehousing."

In a second analysis, Woods Gordon explored the effect on projected resource requirements and costs of four "scenarios" involving alternative health care delivery methods. Specifically considered were: 1) reducing the number of elderly in institutions (hospitals, long-term care and mental health facilities) from the current rate of 9.45 to 6.0 per cent, and admitting all of the "released" patients to formal home care; 2) decreasing the number of mentally ill patients in facilities to the levels successfully achieved by Saskatchewan in 1981; 3) shortening by one day the average length of stay of "non-elderly" (under age 65) patients in the nation's general and allied special hospitals; and 4) introducing nurse practitioners into the primary care system to offset some of the projected requirements for physicians. The "financial savings" collectively yielded by these scenarios in 2021 were reckoned at $6.8 billion, thus nearly having the status quo operating cost projection. Capital cost-savings were even more impressive with the status quo dollar projection slashed by 60 per cent and bed requirements in hospitals and long-term care facilities pared down to 42,000 and 129,000 respectively. Significantly, almost all (89 per cent) of the financial benefits were sourced in the first scenario, i.e., reduced institutionalization of the elderly. Small wonder that readers of the Woods Gordon study have keyed on this finding (discussed by Dr. Auer in Appendix B and by Professor Walker in Chapter 3), and that the Task Force itself devoted disproportionate discussion to what it called "The De-institutionalization Solution."

If the Woods Gordon document is to have a continuing influence in the Canadian debate over alternative methods of health care delivery, it is important to subject its "scenarios" to closer scrutiny than, to my knowledge, has occurred thus far. Accordingly, and because this Conference provides an appropriate and timely opportunity, I intend to so focus the remainder of my commentary. Scenarios 1, 3 and 4 will be singled out for special attention with emphasis placed on assessing their sensitivity to assumptions other than those employed by Woods Gordon. In most cases, these alternative assumptions will be justified with reference to published empirical studies or other readily available data sources. In a few instances, assumptions will be justified as reasonable solely on the basis of consultation with knowledgeable professionals, an approach also employed by Woods Gordon. Then, in the interests of more complete analysis and to avoid what are arguable errors of omission in the Woods Gordon framework for the future, two more scenarios are added to the list. These respectively feature assumed improvements in the operational efficiency of active treatment hospitals and elimination of some marginally ineffective medical services. In a concluding section, the "financial savings" from the revised and expanded scenario list will be summarized and contrasted with those prepared by Woods Gordon.

Scenario 1: Reduced Institutionalization of the Elderly

Since the "institutionalization rate" of elderly persons is a notoriously protean term, it is well to note at the outset that, in the Woods Gordon study, it refers to the average daily percentage (point prevalence) of elderly persons who are in general and allied special hospitals, long-term care facilities and mental health facilities. This definition is notable (and questionable) because it includes all hospital utilization by the elderly, i.e., not just so-called "long-stay" cases in active treatment hospitals, but all stays regardless of duration. Using this definition, Woods Gordon calculated the Canadian rate in 1980-81 at 9.45 per cent and, after brief reference to the figures for the United Kingdom (5.0 per cent), United States (5.3 per cent) and Australia (5.9 per cent), set an overall target rate of 6.0 per cent to be achieved by 2001 and retained to at least 2021 (Woods Gordon 1984, p. 56).

Experts at this conference can presumably assess the reasonableness of this target and the validity of the underlying international comparisons.[4] For his part, Dr. Robertson seems to indirectly validate the target when he refers to the existing "approximate institutionalization rate of 9 per cent in Canada" and later comments that "when all comunity care options have been exhausted, facility based long-term care will probably be needed for at least 6 per cent of the population." However, his specific reference here to long-term care implicitly contradicts the broader Woods Gordon definition of institutionalization. Moreover, Robertson seems also to contradict himself when he asserts that "'de-institutionalizing' the elderly does not imply discharge of more than a few existing LTC (long-term care) residents." At the very least, he begs the question "how many is a few?"

The question may be provisionally answered with immediate reference to the 36.5 per cent of residents who would have to be discharged with the move from an overall rate of 9.45 per cent to the target of 6.0 per cent. Perhaps more meaningful are the numbers of elderly who would have to be daily discharged from hospitals and long-term care facilities in order to achieve the specific target rates for these institutions of 1.5 and 4.5 per cent, respectively. Using data contained in the Woods Gordon study, total discharges from both institutional sources would exceed 78,000 nation-wide in the base year (1981), rising by a factor of 2.5 to almost 196,000 in the "scenario year" 2021. In both years 70 per cent of these de-institutionalized elderly would be leaving long-term care facilities. How many is a few? Opinions doubtless differ.

In the Woods Gordon analysis, the financial benefits of "de-institutionalizing" to 6 per cent are reckoned on the key assumption that all of the "released" elderly are returned to the community and provided with formal home care equivalent to one nurse (VON) visit per week. To cost the care otherwise received by the elderly in hospitals and long-term care facilities, Woods Gordon applied (1981) average per diems of $185 and $45, respectively. On these assumptions, calculations readily yielded "savings" from the status quo in 2021 of $3.8 billion in the operating costs of hospitals and $2.3 billion in the operating costs of long-term care facilities.[5]

The sensitivity of these calculated savings to alternative assumptions may be demonstrated in two discrete steps. First, the assumption of elders returning to the community is retained, but per diems arguably more appropriate to the institutional care received by these "released" elders are substituted for the facility-wide per diems employed by Woods Gordon. As well, other equally reasonable assumptions are made about elders' home care requirements and associated costs. Second, the "return to community" assumption is retained only for those in long-term care facilities, while elders who must be discharged from hospitals (to attain the target 1.5 per cent hospitalization rate) are assumed to be poor candidates for community care and hence transferred to long-term care facilities. This latter modification is equivalent to increasing target institutionalization from 4.5 to 5.5 per cent in long-term care and from 6.0 to 7.0 per cent overall. Each step will be taken in turn.

In respect of per diems, Woods Gordon correctly identified a serious lack of age-sex specific unit cost data. However, several considerations point to problems when default is made to a facility-wide per diem. In the case of hospitals, Manitoba data indicate that approximately half of all hospital days used by the elderly involve stays of 60 days or more (Manitoba Health Services Commmission 1982). Since these "long-stay" cases *should* be the target of a scenario that would impose a 39 per cent reduction on elders' hospital use, it seems reasonable to jointly assume that cuts *would* be confined to "long-stays" and that these cases will exist in sufficient number to fully achieve the target. Moreover, both reason and research (Hochstein 1984) suggest that average per diems for (non-acute) long-stay cases involving elders are considerably lower than those for more service-intensive short-stays involving acute care. For these combined reasons, patient-days "released" from hospitals invite costing at a rate lower than the $185 used by Woods Gordon. A reasonable, albeit arbitrary, figure is the midpoint of the average per diems for hospitals ($185) and long-term care facilities ($45), i.e., $115. With this substitution, the financial benefit from reducing use of hospitals by 20.4 million patient-days in 2021 is reduced from $3.8 to $2.4 billion.

Similar arguments apply in the case of long-term care facilities. Thus, Manitoba's experience with a public universal insurance program for personal care homes involves an administrative and service delivery distinction between "levels of care." Two of the four levels, Level 1 (Hostel Care) and Level 2 (Personal Care) involve relatively light nursing and other services. In the event of a mandated "de-institutionalization" to 4.5 per cent, elders in Level 1 would represent relatively good risks for community care, while those in Level 2 would, by virtue of some dependency in personal care and mobility, represent more problematic transfers to the community. Since approximately one-half of all elderly residents in Manitoba's personal care homes (PCHs) are in Levels 1 (15 per cent) and 2 (35 per cent) (MHSC 1982), and since the province institutionalized its elderly in PCHs at the (age-adjusted) rate of 5.8 per cent in 1980/81, a strategic move to 4.5 per cent would necessitate releasing all elders in Level 1 and only a small proportion of those in Level 2. However, since the corresponding national rate in 1980/81 was higher (6.8 per cent) than Manitoba's, a nation-wide drive to de-institutionalize PCH-like facilities might well require proportionately more Level 2 type discharges. For present purposes, it will be assumed that the necessary cut of 34.4 per cent (from 6.8 to 4.5 per cent nation-wide) would be sourced half and half between Levels 1 and 2. Unit costs corresponding to each of these levels are almost certainly less than the average for all four levels, and indeed the province's central health funding agency approved PCH budgets partly on the basis of "case-mix." Thus the rationale for costing patient-days "released" from long-term care facilities at a per diem rate lower than the $45 used by Woods Gordon. Figures of $25 and $35 for Levels 1 and 2, respectively, have the requisite face validity, at least for present purposes. With these substitutions, the financial benefit from reducing elders' use of long-term care facilities by 51.0 million patient-days in 2021 is reduced from $2.3 billion to $1.5 billion.

In respect of formal home care requirements for all elders "released" to the community, Woods Gordon calculated the incremental visit volume by nurses at 10.3 million with associated incremental costs of $185 million in 2021.[6] Manitoba's decade of experience with public, universal home care providing comprehensive nursing, homemaker and other services suggests that alternative, less conservative (and arguably more realistic) estimates should be considered. Insofar as those elders "released" from hospital are concerned, recent research indicates the importance of distinguishing palliative care requirements for those who would otherwise have died in hospital from those elderly "survivors" whose home care requirements involve a less specialized mix of services (Shapiro 1983). On the basis of this research and other information, it can be reasonably assumed that approximately one-fifth of the 20.4 million patient-days "released" from hospitals would have been associated with decedents whose palliative care requirements in the home might well have cost $40 per day in the base year (1981).[7] For the "survivors" representing four-fifths of the "released" patient-days, unit costs based on the Manitoba experience are estimated at $175 per month (1981 dollars).[8] For those elders "released" to home care from long-term care facilities, the "Manitoba validated" assumption is made that monthly costs would be substantially lower, averaging $100 per month.[9] Overall, therefore, "comprehensive" home care costs rooted in the highly relevant Manitoba experience are projected at $430 million in 2021 under the "6 per cent de-institutionalization solution." This figure exceeds by a factor of 2.3 the Woods Gordon estimate of $185 million.

The second step in the sensitivity analysis of Scenario 1 in 2021 involves the previously mentioned modification of the "return to community" assumption. In particular, on the plausible assumption that *none* of the 20.4 million long-stay patient-days "released" from hospitals are good risks for home care, but instead are better transferred to long-term care facilities, it can be easily shown that savings in long-term care costs decline dramatically from the original Woods Gordon estimate of $2.3 billion and the alternative estimate of $1.5 billion developed above using the "new" unit cost assumptions. To do this, it need only be realistically assumed that the transferred patients will represent a 50/50 mix of relatively heavy extended care clients corresponding to Levels 3 and 4 in Manitoba's PCHs and, as well, that corresponding per diems jointly average $60.50 (or 50 per cent higher than the Woods Gordon facility-wide per diem of $45). Thus, calculated net savings in long-term care costs amount to only $150 million.[10] Corresponding decreases in the numbers of elderly returned to the community reduce the required "add-back" for "Manitoba-type" home care to $170 million. Together, these adjustments to long-term care and home care costs complete the assessment of this, the relatively week version of "de-institutionalization" involving an overall target rate of 7.0 per cent in 2021.

Summary results for the sensitivity analysis of Scenario 1 are shown in Table 4-1. Readily apparent are: 1) the sharp decline from $3.8 to $2.4 billion in "savings" from status quo operating cost projections for hospitals when moving from the facility-wide per diems employed by Woods Gordon to superior substitutes involving "case-mix" sensitive unit costs; 2) the equally dramatic decline from $2.3 to $1.5 billion in long-term care "savings" when, again, "case-mix" sensitive unit costs are substituted for the non-specific per diems used by Woods Gordon; 3) the substantial increase in the "add-back" for formal home care when Manitoba magnitudes are modeled in the full (6 per cent) "de-institutionalization solution"; and 4) the deep decline in aggregate Scenario 1 savings from the $5.9 billion Woods Gordon figure to the $3.5 and $2.3 billion figures associated with the unit cost modified "6 per cent" and "7 per cent" solutions, respectively.

Table 4-1

The Financial Savings of the "De-Institutionalization" Scenario from Status Quo Projections of Annual Operating Costs for Hospitals, Long-Term Care Facilities and Home Care, 2021 (1981 Dollars)

	Woods Gordon	Alternative 1 (cost revisions)	Alternative 2 (cost and use revisions)
Sector:			
Hospitals	3.8 billion	2.4 billion	2.4 billion
Long-term care facilities	2.3 billion	1.5 billion	150 million
Home care	–183 million	–430 million	–170 million
Total	5.9 billion	3.5 billion	2.3 billion

Scenario 3: Reduced Average Length of Stay in Hospitals

In the Woods Gordon projection model this scenario "was developed to investigate the impact of reducing the average length of stay of patients in the 0-64 age group in general and allied special hospitals" (1984, p. 62). Based on "discussions with the Task Force members and selected government and hospital contacts," a one day reduction in the average length of stay was targeted for 2001 on the assumption that it would be feasible to make "more widespread use of day surgery, pre-admission testing, short-stay obstetrics, self-care units and statistical discharge prompting systems." As well, "new technology also might contribute to the reduction in length of stay." The effective impact of this scenario in 2021 was an 11 per cent reduction in hospital use by the non-elderly population and, using the $185 per diem, a corresponding financial saving from the status quo projection of $620 million.

Several considerations suggest the "only day" target and associated "savings" to be excessively conservative. First, it is readily apparent from data contained in the Woods Gordon study that age-sex specific hospital use (patient-day) rates in several provinces were *below* the implied targets in 1980/81. Indeed, a "nationalization" of these low rates would yield financial benefits in *2021* $340 million *higher* than Woods Gordon projected! Until and unless it is shown that residents of these "low rate" provinces are any worse off in health status terms than their counterparts in "high rate" provinces, the assumption should be made that these rates represent feasible "futures." Second, research on sub-provincial (including small areas) variations in hospital use systematically fails to implicate population health status differences as a major or even significant variable explaining the gap between low and high rate areas. In a recent Manitoba study, for example, there was no obvious explanation for the fact that "Brandon residents used *44 per cent* more hospital days per capita, age-sex adjusted, than did Winnipeggers in 1981/82, and rural residents used *34 per cent* more" (Roch et al. 1985, p. 216). Third, in a recently reported randomized controlled trial, it was shown that a group of enrollees in a prepaid group practice (HMO) used 40 per cent fewer hospital days than a comparison group managed through the fee-for-service system (Manning et al. 1984). This clearly implicates organizational and economic factors (and simultaneously discounts health status differences) in observed utilization differentials. Fourth, and perhaps even more to the point, the list of initiatives identified by Woods Gordon as potential sources of the target 11 per cent reduction in hospital use are almost certainly capable of yielding higher dividends if implemented to the fullest feasible extent and on a nation-wide scale. To illustrate, Shah (1980) has calculated that if British Columbia's experience with day-care surgical programs in the mid-70s had been general from coast-to-coast, *overall* hospital use would have been lowered by almost 9 per cent, thus achieving over 80 per cent of the Woods Gordon target for 2021 four and one-half decades early! As for short-stay obstetrics, nation-wide implementation of "early discharge" programs for the normal deliveries could be expected to produce a 6 per cent reduction in *total* hospital use among women in the age group 15-44 years.[11] These examples and the above noted considerations underscore the potential for very significant reductions in hospital use among the under 65 population, and, in my view, provide a compelling rationale for adopting 30 per cent as the target for reduced hospital use by the non-elderly population.[12] Costing the corresponding 9.1 million patient-days using the per diem of $185,[13] the Woods Gordon projected saving from the status quo gets multiplied 2.7 times to yield $1.7 billion.

Scenario 4: Introduction of Nurse Practitioners

Woods Gordon developed this scenario "to investigate the possible impact on additional physician manpower requirements of the introduction of nurse practitioners as primary health care providers" (1984, p. 64). The specific aim was "to estimate what proportion of the Status Quo model's additional physician manpower requirements could be met by introduction of nurse practitioners.... [but] The substitution possibilities for physicians already in practice" (1984, p. 64) were not investigated. The latter decision was especially consequential in the analysis. Using an otherwise reasonable, albeit conservative, substitution parameter drawn from the appropriate literature (Lomas and Stoddart 1982), Woods Gordon established practice opportunities for 2,705 nurse practitioners in 2021 and thereby reduced the status quo increase in requirements for physicians from 47 to 41 per cent. Alternatively, had full substitution for physicians "already in practice" been assumed, the total number of practice opportunities for nurse practitioners in *2021* would have increased to 6,705! The historical resistance to incorporating in the mainstream of the Canadian health care system a technology demonstrated to be safe and effective in numerous well-controlled studies has been aptly described as "the slow death of a good idea" (Spitzer 1984). However, to minimize the possibilities for its introduction in the year 2021 in a study commissioned to explore promising scenarios for redirection of the entire system is, in a word, inexcusable.

Equally inexcusable was the decision by Woods Gordon not to project financial savings from this scenario. The ostensible difficulty was "the general level of debate concerning the cost effectiveness of nurse practitioners, and the lack of a good database from which to draw the conclusions." This statement is unconvincing since it would take some effort not to be aware of the carefully crafted study by Denton et al. (1982) entitled, "Potential savings from the adoption of nurse practitioner technology in the Canadian health care system." The oversight is all the more surprising when Woods Gordon acknowledges using the closely related study by Lomas and Stoddart (1982) to calculate the substitution possibilities! In the former study, conservatively estimated savings from the introduction of nurse practitioners amount to 10-15 per cent of total medical costs. Using the mid-point of this range, and projecting status quo expenditures in physician services of $5.1 billion in 2021,[14] the financial benefits of this scenario amount to $630 million.

Scenario 5: Increasing the Operational Efficiency of Hospitals

While this scenario was not considered by Woods Gordon, there are good and sufficient reasons for its addition to the list. First, in a 1969 discussion of operational efficiency in hospitals the Task Force Reports on the Cost of Health Services in Canada noted:

> Consulting firms with hospital experience indicated that effective productivity can be raised between 10-30 per cent by the use of work study techniques properly initiated and controlled. There are instances in which these techniques have been used effectively in large hospitals with a significant decrease in operating costs (CMA 1969, p. 66).

While it is conceivable that improvements have occurred since 1969, it is inconceivable that all potential efficiency gains have been fully exploited. Indeed, that consulting firms continue to be engaged by hospitals to improve operational performance points to some degree of persisting waste and inefficiency. Second, the 1969 Task Force also referred to difficulties in "evaluating the quality of nursing care" and to the lack of an "adequate system for determining the numbers and categories of nursing personnel required to deliver nursing care to patients", an informational gap "not conducive to cost saving efforts" (p. 85). Here again progress has doubtless occurred, but I was recently advised by several senior nurse executives that "much remains to be done". Third, and related to the previous point, data for non-teaching active treatment hospitals located in urban (Winnipeg and Brandon) Manitoba reveal variations in nursing productivity (crudely measured by the ratio of patient-days per FTE nurse staff) of 10-30 per cent that have no obvious explanation in either scale or case-mix differences. Fourth and finally, in a useful background paper prepared for this conference, Ludwig Auer reviews his own research on hospital costs and productivity and concludes, among other things, that "if hospital costs are to be contained in the future, the productivity of hospitals needs to be improved by providing incentives for greater efficiency" (discussed by Dr. Auer in Appendix A). In light of these observations, it seems reasonable to conclude that efficiency gains in the neighbourhood of 10 per cent are entirely possible; the figure 7 per cent is selected to ensure a measure of conservatism in the scenario. Reducing the 1981 average per diem of $185 by this percentage and applying the result to the 52.48 million patient-days projected for 2021 *after* allowing for (allocative) efficiency gains from the assumed harmless reductions in hospitalization under Scenarios 1 and 2, yields financial benefits of $680 million.

Scenario 6: Eliminating Some Marginally Ineffective Medical Services

This scenario is added to the list in recognition of the growing literature indicating that some services are either ineffective or, more commonly, are utilized at rates in excess of those compatible with marginal effectiveness. Selected studies that seriously question the incremental effect of service frequency on health status include the Roos' work on common surgical procedures in Manitoba (Roos et al. 1977; Roos and Roos 1981), and a recent careful evaluation of the well-baby examination suggesting a visit protocol less frequent than that paid for by the Ontario Medicare program would have no negative effects (Gilbert et al. 1984). As well, the frequency of many routine diagnostic technologies such as chest X-rays, electrocardiography, and endoscopy continues to be the subject of controversy in the absence of carefully controlled evaluations (Kahn et al. 1985). Indeed, it is the paucity of good evaluative studies of common medical practices that most bedevils the provincial governments who are bound by their own health care insurance statutes to pay for any service deemed medically necessary by a physician. While in these relatively ignorant circumstances the incidence of marginally ineffective service provision is unknown, few if any informed participant-observers would assert it to be zero. A figure of 10 per cent is arbitrarily selected to illustrate how important it is to improve the quantity and quality of evaluative efforts in this area. At the risk of some "false precision," this percentage figure is applied to the projected medical care bill of $5.1 billion in 2021 only *after* deducting the dollar value of services supplied by nurse practitioners under Scenario 4. Thus calculated, the financial benefit from Scenario 6 is $450 million in the year 2021.

Summing Up the Financial Benefits of the Scenarios

The outcome of the foregoing attempt to "radicalize" Woods Gordon is summarized in Table 4-2. Conspicuously:

1) the total financial payoff in the year 2021 to Scenarios 1-6 is, at $6.0 billion, considerably lower than the Woods Gordon figure based on the narrowly focused futures foreseen by Scenarios 1-3;

2) the payoff to "de-institutionalizing" the elderly is dramatically reduced when "sensitized" to more realistic assumptions about the relative costs of caring for dependent elders in different settings and, as well, to informed professional opinion concerning the likely limited prospects for "releasing" large numbers of elderly from hospitals to home care;

3) related to (2), the contribution of "the de-institutionalization solution" to total potential savings

Table 4-2

The Financial Savings of the Scenarios From Status Quo Projections of Annual Operating Costs in the Year 2021 (1981 Dollars)

	Woods Gordon	"More radical approach"
Scenario 1 Elderly	5.9 billion	2.3 billion
Scenario 2 Mental health	225 million	225 million
Scenario 3 Hospital use	630 million	1.7 billion
Scenario 4 Nurse practitioner	Not calculated	630 million
Scenario 5 Hospital costs	Not scenarioed	680 million
Scenario 6 Medical care	Not scenarioed	450 million
Total	6.8 billion	6.0 billion

from status quo operating costs in 2021 drops precipitously from 88 per cent under Woods Gordon to 38 per cent under the revised and expanded list of feasible "futures"; and

4) related to (3), the potential financial contribution of scenarios specific to sectors other than the long-term care of the elderly rises from a paltry 12 per cent under Woods Gordon to a more robust 58 per cent under the "more radical approach."

Like any rational investor forced to make decisions amid considerable uncertainty, the Canadian government should diversify their policy-planning portfolios to include a mix of alternative delivery methods to bring about what the CMA-sponsored Task Force aptly called "a need for redirection." To bet heavily on "the deinstitutionalization solution" at the expense of other equally attractive options in the wider health care system is to invite major disappointment when the mega-dividends projected by Woods Gordon to be "paid by the elderly" fail to materialize.

Floor Discussion

Question: *The projections by Denton and Spencer seem unduly optimistic. If they had looked at the age group 85 years and over, which particularly concerns us, they would have found not a 10 per cent but a 150 per cent increase over the next 25 years. Would that have made a significant difference?*

Answer: When we talk about the rate of aging of the population, we need to keep in mind that it is not a regular process but one that comes in demographic waves. One of the reasons that we have that pattern of growth is the population increase that was postponed by the Great Depression and the Second World War but subsequently emerged as the "Baby Boom." Right now we have a decline in the population aged 65 years and over. In the future we can expect an initial increase in acute-care needs as people enter the 65-70 age group and a subsequent switch to long-term care as they reach the 80-85 age limit. So we are not talking about a 1 or 2 per cent regular increase about about a large shifting of resources among institutions from one time period to the next.

Up to the year 2021, the demographic pressure on the health care system will amount to an annual rate of growth of roughly 0.9 per cent (in real terms). The only reason to worry about this projection is the pressure of an additional 1 to 3 per cent per annum from new medical technology, as well as further pressure from health-sector-specific inflation. It is not clear whether these added pressures are within or beyond the reach of health care policy. If they can be brought under control, there will be little cause to worry.

The main point, however, is that the outcome depends not only on demographics but also on a social concensus.

Question: *Different health care programs are sought by strong interest groups with a vested interest in health care delivery. How do we reach a social consensus? What do we do, for example, with all these surplus physicians?*

Answer: There is no great objection to our current spending on health care. There is no strong opposition to the idea that we should do more to assist the elderly, even if that approach costs more money. What happens when we keep adding to the services? Ultimately the issue is one of income distribution, pure and simple - that is, what income shares should go to different age groups and how much of our total income should be spent on health care. It is likely that health care as a proportion of Canada's GNP – today, 8.6 per cent – will continue to increase.

It is amazing that the Canadian health care system has maintained such good cost control for so long without any incentives for efficiency. There are no incentives for patients at the point of care to use resources wisely. There are no incentives within fee-for-service practice to make use of efficacy and effectiveness information. There are no incentives for community physicians to use hospitals wisely. There is no incentive for cost-reducing technology development. It is the only sector of economic activity where technology has increased costs. It is amazing – and it's a tribute to Canadian consumers, Canadian patients, and Canadian health professionals and administrators alike – that the system that they built has survived for so long.

Question: *Could the panel comment on the U.S. concept of social health/maintenance organizations (HMOs) as a way of channeling individuals into the right types of care?*

Answer: The point was made earlier this morning that the Canadian health care system is de facto an HMO. That is patently wrong. We do not have the equivalent in Manitoba, for example, because we do not have captive populations in the health care system. It would take some radical restructuring - to use Duncan Robertson's terminology – to put in place the necessary and sufficient conditions for HMOs within the Canadian provincial health care system.

Question: *How serious the cost pressures are going to be will depend to some extent on whether or not we consider the cost of care for the elderly to be part of the benefits arising from higher rates of taxation in earlier years. Are the cost pressures perhaps not as great as we think?*

Answer: In the United States we are asking whether we can afford more health care, and people are saying that we cannot and that we ought to do less in order to reduce expenditures. When questions are raised about introducing this or that new technology, the response depends on whether it adds to overall costs. If it adds to costs, we'd prefer not to do it. That point has been most widely expressed by Richard Lamb, the Governor of Colorado. Granted that you could probably put his knowledge of the issue on the back of postage stamp, he has nevertheless raised it and forced people to think about it.

Question: *It has been shown that there are many persons other than physicians who can provide some of the health care services. How could we overcome some of the barriers to alternative modes of health care* delivery?

Answer: There has to be a money incentive for somebody in the system. It will take more than nurses storming legislatures, camping overnight, and lobbying politicians. It will be necessary to show that there are greater benefits to be derived by the recipients of the health care services – the consumers. In Manitoba, for example, there are incentive structures now that may lead to the introduction of more cost-effective professionals, such as nurse practitioners.

We should keep in mind, however, that when we talk about alternative modes of health care delivery, we are talking about a very small minority of the elderly who use those kinds of programs. Our research in Manitoba indicates that nursing-home people are hospitalized less often than others in the same age groups who are living in the community. So, in effect, not all the costs of alternative programs are additional. But we still have to decide which programs add to overall health care costs and which do not.

5 Advances in Preventive Care

Madeleine Blanchet

Introduction

I would like to begin by explaining the general approach followed in this paper on advances in preventive medicine. I have adopted a very broad perspective on this issue, and I have not limited myself to its geriatric aspects, since the goal of this conference is to look into the future – a future that will bear the mark of older people, despite the fact that this country has always been seen as young by European nations. The effects of an aging population will soon be upon us. They are with us now, in fact, but this phenomenon will become more and more evident as we approach the year 2010, because the full impact of the falling birth rate, which began around 1960, will not be felt until the first half of the 21st century.

It is worthwhile to recall that our population is aging because of the combination of three parallel forces:

- a rapidly declining birth rate;
- decreasing mortality rates among the elderly themselves; and
- in certain provinces (Quebec, New Brunswick), an exodus of young people to expanding urban centres across Canada.

The roles played by these three factors in the gradual aging of the population, and in our perception of this process, are not equal. While the declining birth rate is potentially the most serious factor, I will focus on declining mortality rates among the elderly, because this factor has already had a major impact on our health care system and on certain social programs, such as old-age pensions.

Life Expectancy, Quality of Life and Costs

Until now, increases in life expectancy have occurred mainly as a result of declines in infant mortality rates. These rates will soon be reaching a plateau, however, and further improvements will be difficult since virtually all infant deaths will be due to congenital defects. In addition, a new phenomenon has appeared over the past decade – i.e., aging at the top of the age pyramid. This means that life expectancy after age 65 has risen more in the last decade than in the preceding 30 years (Chart 5-1 ; Conseil des affaires sociales et de la famille 1984, p. 30).

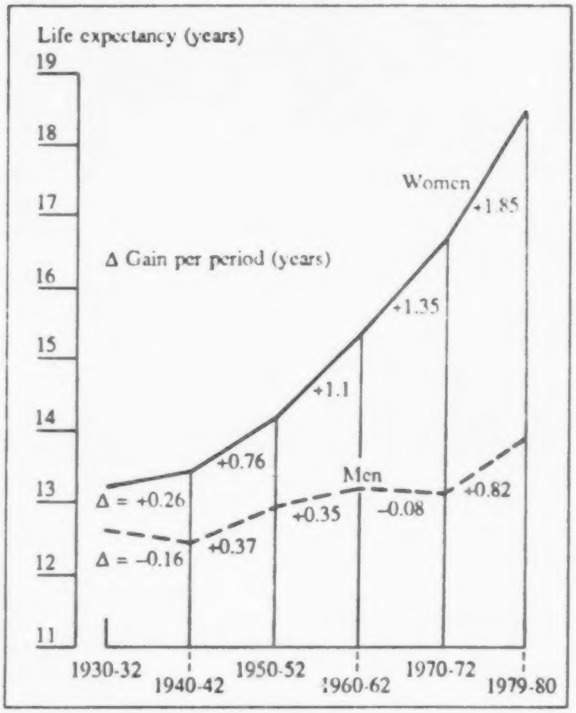
Without going into great detail about the cases of this development, it is clear that several factors are involved, ranging from higher incomes and better living conditions to improvements in treatment and rehabilitation, and including the activities of countless "Golden Age" clubs. But the costs of caring for the elderly are substantial. In Quebec, for example, total health-care expenditures for persons aged 65 and older were over $3,000 per capita in 1985, compared to an average of about $1,000 per capita for the population as a whole (Camirand 1983, pp.18-26).

One can legitimately ask whether advances in preventive medicine will succeed in reducing the costs involved in caring for our youngest and oldest citizens, particularly those aged 75 years and and older (Fries 1980). Specifically, is it worthwhile to invest in prevention if the result, perversely, is a larger bill for providing health care services to the very old. This issue has been raised by some economists who believe that investing too much in prevention is unwise because it leads to greater demands on the system from elderly patients (De Kervasdoue 1984, pp. 145-61; Badou 1985).

For epidemiologists, this is not the issue, however, because it has not yet been proven that declining mortality rates inevitably lead to more-widespread disability. Nor has it been shown that fatal illnesses will simply be replaced by disabling illnesses, or that there will be exponential increases in health care and rehabilitation costs. On the contrary, recent studies of trends in disability and curtailed activities have shown conclusively that lower mortality does not cause a rise in severe disability (where the person is confined to bed, requires assistance to get around, or must live in an institution), but simply an increase in slight to moderate disability (Robine and Brunelle 1986).

Chart 5-1

Life Expectancy Gains, Men and Women Aged 65, Quebec, 1930-80



SOURCE: Conseil des affaires sociales et de la famille, *Objectif: Santé* (1984).

Thus, on the surface, contemporary medicine and our health care system receive high marks if we look only at the most severe consequences of disease – disability and loss of independence. Both the circumstances and conclusions are different, however, when we examine quality of life. It is an inescapable fact that life expectancy for persons in good health scarcely exceeds 60 years, and that a girl born today will experience some curtailment of her activities during the last 18 years of her life (11 years in the case of a boy; Dillard 1983, p. 34). And finally, the gap in healthy life expectancy between rich and poor – 14 years in the Montreal metropolitan area, for example – cannot be ignored (Wilkins 1980, pp. 22-24). Wide gaps also exist between occupational categories: the need to curtail activities for reasons of poor health is likely to be five times greater among primary-sector workers (farmers, fishermen, loggers, etc.) than among directors, administrators, and business managers (Dillard 1985, p. 58).

Importance of Choosing the Right Indicators

These considerations force us to revise our judgment. We cannot claim victory simply because mortality from certain causes has dropped and because life expectancy has risen substantially in the last decade. Indeed, assessments of the state of health care in Canada and in each province are biased by the health indicators being used, since they have but a tenuous connection with the treatment and prevention system. (I am deliberately avoiding using the term "health care system" here because Canada does not actually have a health care system, only a system of treatment, prevention and rehabilitation.)

In the Lalonde report, it was noted that lifestyle, behaviour (healthful or detrimental to health), the physical, social and economic environment, and heredity all play a much more fundamental role than the health care system in delaying death, particularly premature death (defined according to the number of years potentially remaining before age 70). It is important to realize that the choice of an indicator or of a set of indicators very definitely shapes the objectives and purpose of health and health care policy, and thus our assessment of their effectiveness and efficiency. If assessments of the health care system continue to be based on indicators such as life expectancy, infant mortality, mortality rates for different ages, and the incidence of certain reported diseases (such as communicable diseases), we will surely reach a dead end. Such broad indicators as statistics on public health have only a remote connection with the health care system, and the system cannot be blamed for failing to achieve public health goals when it was not created for that purpose.

Choosing the Right Indicators

My proposal is as follows: first, a set of precise indicators that are well matched to the system of treatment, prevention, and rehabilitation should be developed; and, second, a set of broader public health indicators that are not based solely on mortality should also be maintained. This is the route taken in 1982 by the Conseil des affaires sociales et de la famille (CASF). After entering into an agreement with France's Institut national de la recherche médicale et scientifique, the Conseil was able to carry out research aimed at developing a new general indicator for health, named "healthy life expectancy" (Colvez and Blanchet 1981, 1983) using this indicator alone and in combination with other measurements of mortality and morbidity, the Conseil recommended the adoption of a new prevention-oriented, public health policy. This policy is summarized in *Objectif: Santé* (CASF 1984, p. 35).

Towards a Health Policy

Objectif: Santé, published by the Conseil in the fall of 1984, is a general reference paper for the development of precise and quantifiable health objectives based on reported health statistics at the provincial, regional, and local levels.[1] At the local level, most of the 32 community health departments will have completed the process of assessing the local health status and establishing local priorities by June 1986, and will then be ready for concerted action.

In addition, Quebec's new Commission of Inquiry on Health and Social Services (known as the Rochon Commission, after its chairman) will be looking both at health goals and health-care financing. This means that the choice of indicators and objectives will be the subject of much debate in Quebec and the rest of Canada alike.

Thus it seems appropriate to devote part of this paper to a historical review of major developments in the fight against death and disease, with special emphasis on the underlying purpose in each case.

Goals of Health Policy in a Historical Context

The purpose of health policy in developed nations can be summarized in terms of three overlapping stages (Tarlov 1983):

1. Prevention of premature death;

2. Diagnosis and correction of biological, metabolic, and physiological deficiencies (hypertension, hypercholesterolemia, etc.); and

3. Maintaining and improving the functioning of the individual within the family and the society.

Prevention of Premature Death (1800-1940) — According to McKeown (1982), the first factor to improve people's health and to lower the mortality rate was better food and eating habits. During this period, advances in nutrition had a greater impact than environmental, therapeutic and behavioural factors.

After the beneficial effects of better food and eating habits came improved hygiene. Hygienic measures are responsible for about one-fifth of the fall in the mortality rate between 1850 and today. This decline can be attributed to the separation of the drinking-water, supply and distribution systems from the waste water disposal systems. These measures were considerably helped, in the early part of the 20th century, by progress in food hygiene (particularly milk sterilization), which led to spectacular declines in the infant mortality rate.

The effectiveness of health measures was further increased by subsequent improvements in working, living, and environmental conditions.

The drop in mortality due to intestinal infection during this period was primarily attributable to the decline in water- and air-borne disease that resulted from better hygiene. Scientific discoveries (immunization, new drugs) simply put the finishing touches on this process.

Diagnosis and Correction of Biological, Metabolic, and Physiological Deficiencies (from 1940 to the present) — This period extends approximately from 1940 to the present day. It has been marked by extensive technological development. The hi-tech medical industry has placed sophisticated equipment (advanced scanning and monitoring devices, etc.) into the hands of doctors, and laboratory testing procedures have been greatly improved, allowing earlier diagnosis and more-rapid treatment of disease. The development of the pharmaceutical industry has led to more-effective therapeutic treatments and to the development of more-powerful drugs than were previously available.

Great progress has been made in the diagnosis and treatment of disease and in rehabilitation, and the incidence of both morbidity and mortality for specific diseases has declined, notably for infectious diseases and certain chronic illnesses such as cerebrovascular disorders linked to hypertension.

Maintaining and Improving the Functioning of the Individual in His Environment (1970 and onward) — For some time now, the emphasis has been on functional objectives (independence, continued mobility, ability to carry out daily tasks) and on the concept of quality of life. These considerations are closer to the concerns of the public. The objective is no longer simply health, but health as a means of achieving a better quality of life. Individuals are becoming more and more aware of the state of their physical and mental health. They are more critical of traditional medicine and the health care system, which they see primarily as a remedial service. In fact, medical training is more oriented towards treating symptoms than caring for people in the context of their overall environment and lifestyle; that is why family doctors face a dilemma in the daily practice of their profession.

Is it not, therefore, a good idea to develop the concept of healthy life expectancy in order to influence the training received by medical personnel (doctors, nurses, social workers, physiotherapists, and others)? By adopting a concept such as healthy life expectancy, priorities in the fight against disease will also change to some degree at all levels of the prevention and treatment system. The major diseases are ranked differently when healthy life expectancy is used instead of simply life expectancy (Table 5-1).

For medical practioners, this approach would make it possible to devote their attention to the true aims of the health care system. These aims are:

- to utilize the self-healing powers of all living beings;
- to alleviate chronic pain and even eliminate it entirely if possible;
- to calm anxieties about disease and fears about death; and
- to facilitate the best possible adjustment of the sick or disabled person through those who are close to him or her.

Broadly speaking, these are the goals of medicine as expressed in the Hippocratic oath: a purpose as noble as that of the public health system. *Above all, we must avoid confusing the goals of the health care and public health systems. Although both strive for better health, they do so at different levels: medicine at the level of the individual, public health at the level of the community.*

Progress During the Past Decade

Following this historical review, let us now look at the major advances in the fight against premature death that have occurred in the last decade, based on Quebec health statistics (Roy 1983; Levasseur 1983). These figures differ from those for the rest of Canada by only a few tenths of a point.

The main achievement has been the reduction in mortality due to birth complications, diabetes, cervical cancer, cerebrovascular illness, cardiovascular (or ischaemic) illness, and motor vehicle accidents. In some cases, these advances can be attributed to the implementation of early detection systems and to better access to treatment. The remarkable decline in cervical cancer since 1971 demonstrates that easier access to an efficient early detection system has been a major step forward (Chart 5-2; Blanchet et al. 1983).

Improved diagnostic procedures and greater control of hypertension through drugs have hastened the decline in deaths related to hypertension, cerebrovascular accidents, and heart disease – a trend that began in 1960 (Brody 1982).

Table 5-1

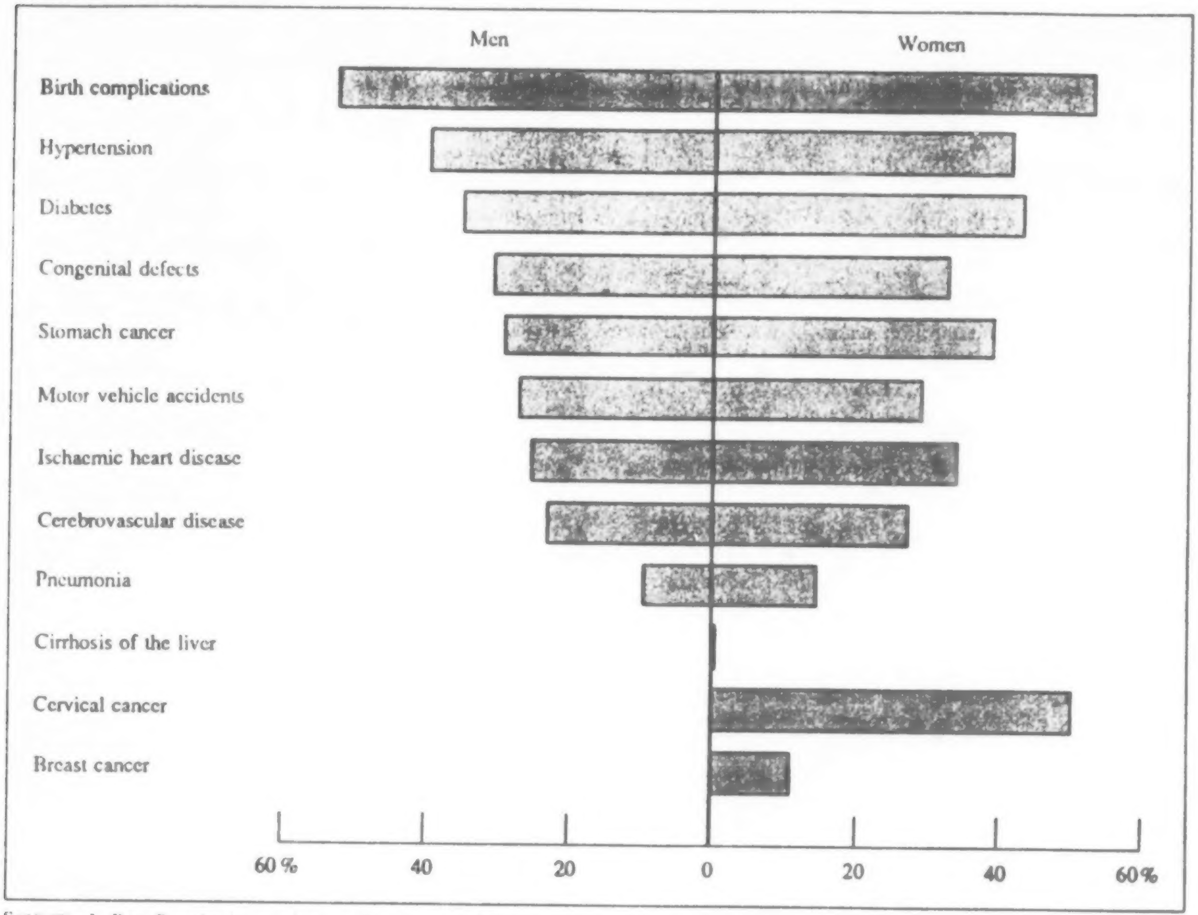
Impact of Major Illnesses on Healthy Life Expectancy (HLE), Quebec, 1980

	Impact on mortality rate	Impact on restricted activities	Impact on HLE
Category of illness:			
Circulatory system disorders	3.53	2.64	6.17
Osteo-articulatory system disorders	–	3.51	3.51
Tumours	2.34	–	2.34
Accidents and trauma (excluding suicide)	1.02	1.08	2.10
Respiratory system disorders	0.44	1.51	1.95
Mental illness (including suicide)	0.50	0.81	1.31
Congenital defects and birth complications	0.95	–	0.95
Digestive system disorders	0.36	0.28	0.64
Diabetes	0.17	0.14	0.31
Nervous and sensory system disorders	0.17	0.12	0.29

SOURCE Conseil des affaires sociales et de la famille, *Objectif: Santé* (1984).

Chart 5-2

Percentage Variation in the Decline of Death, by Major Cause and Sex, Quebec, 1971 to 1980



SOURCE: L. Roy, *Des victoires sur la mort*, Conseil des affaires sociales et de la famille (1983).

Lower cigarette consumption by men has had an effect on deaths due to lung cancer; the mortality rate continues to rise, but at a slower pace. Between 1971 and 1980 the rate of lung cancer deaths rose by 33 per cent, compared with a jump of 85 per cent between 1961 and 1971 (Chart 5-3).

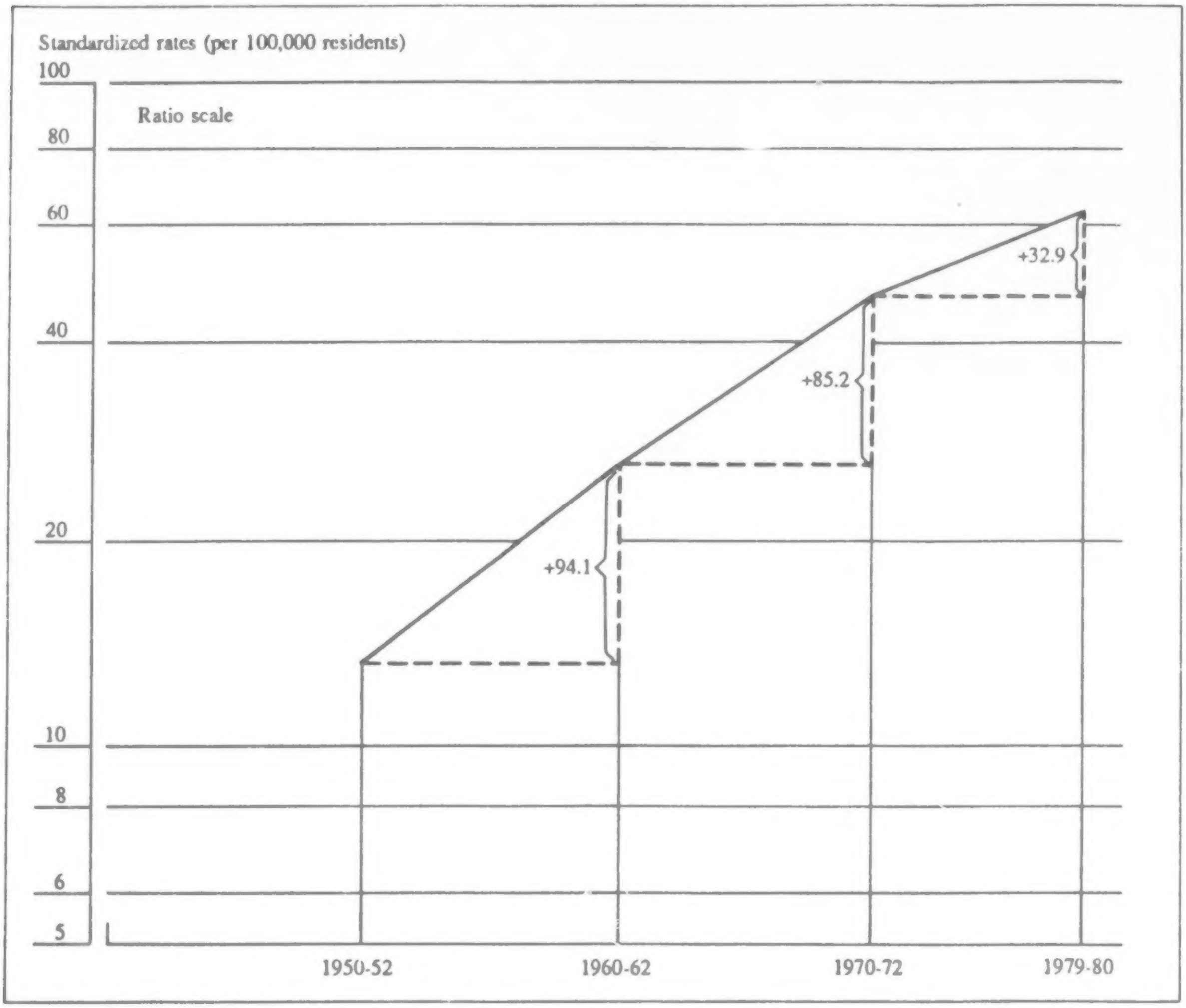
Still in reference to men, a similar trend is evident for cirrhosis of the liver, which rose by only 5 per cent in the last decade, compared with 37 per cent in each of the two preceding decades (Chart 5-4). This phenomenon can probably be traced to changing alcohol consumption patterns. It is interesting to note that in France, where alcohol consumption has been on the decline for over 25 years, the number of deaths due to cirrhosis has been been dropping since 1975 (Robine et al. 1985).

Generally speaking, residents of Quebec tend to live longer than ever before. Life expectancy at birth has risen steadily, and there has been an appreciable improvement in the life span of elderly persons in the last decade.

For males between the ages of 45 and 64, life expectancy started to rise again during the last decade. This trend is in contrast with the 1960s and 1970s, when the life expectancy of middle-aged men showed virtually no change. For younger males, the reversal of the accidental-death trend has meant that many more adolescents and young adults have survived.

Chart 5-3

Lung Cancer: Standardized Rates and Percentage Variation in Male Mortality Rate, Quebec, 1950-52 to 1979-80



SOURCE: L. Roy, *Des victoires sur la mort.*

These advances, as well as others mentioned earlier, illustrate the importance of organizing government authorities and the public at large to fight the causes of death and disability that impose the heaviest costs on society.

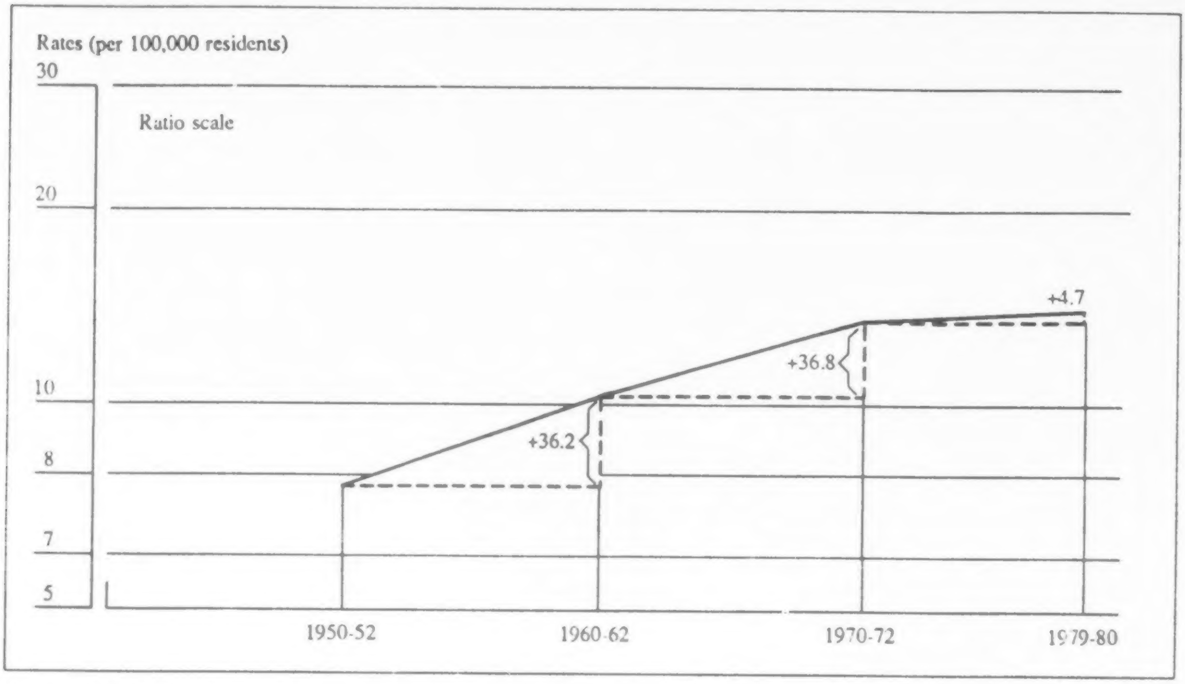
Failures During the Past Decade

Successes in reducing premature death due to circulatory system disorders are mainly the result of better control over risk factors, easier access to prevention and treatment, and progress in therapy and rehabilitation. The same is not true, however, of other causes of death that are currently on the rise (Chart 5-5).

The suicide epidemic among young people as well as the sharp rise in the suicide rate among women aged 50, represents a failure not only for health care, but for our society (Chart 5-6).

Chart 5-4

Cirrhosis of the Liver: Standardized Rates and Percentage Variation in Male Mortality Rate, Quebec, 1950-52 to 1979-80



SOURCE L. Roy, *Des victoires sur la mort.*

Moreover, despite the decline in the general mortality rate for adolescents and young people during the 1970s, the high incidence of violent death among these groups is very disturbing. Automobile and motorcycle accidents, firearm accidents, and suicides top the list. Quebec accident rates remain higher than those in most industrialized countries. And, compared with other nations, the high-excess mortality rates for males, a common concern, were still characteristic of both Quebec and Canada in 1980 (Chart 5-7).

Finally, despite a slight drop in general cancer-related mortality rates, the steady increase in the rate of death from leukemia over the past 30 years continues to be of great concern to those fighting the war against cancer. While this increase may be partly attributable to more precise diagnoses and more complete death statistics, the origin and risk factors associated with this type of cancer, as with several other types, remain unknown.

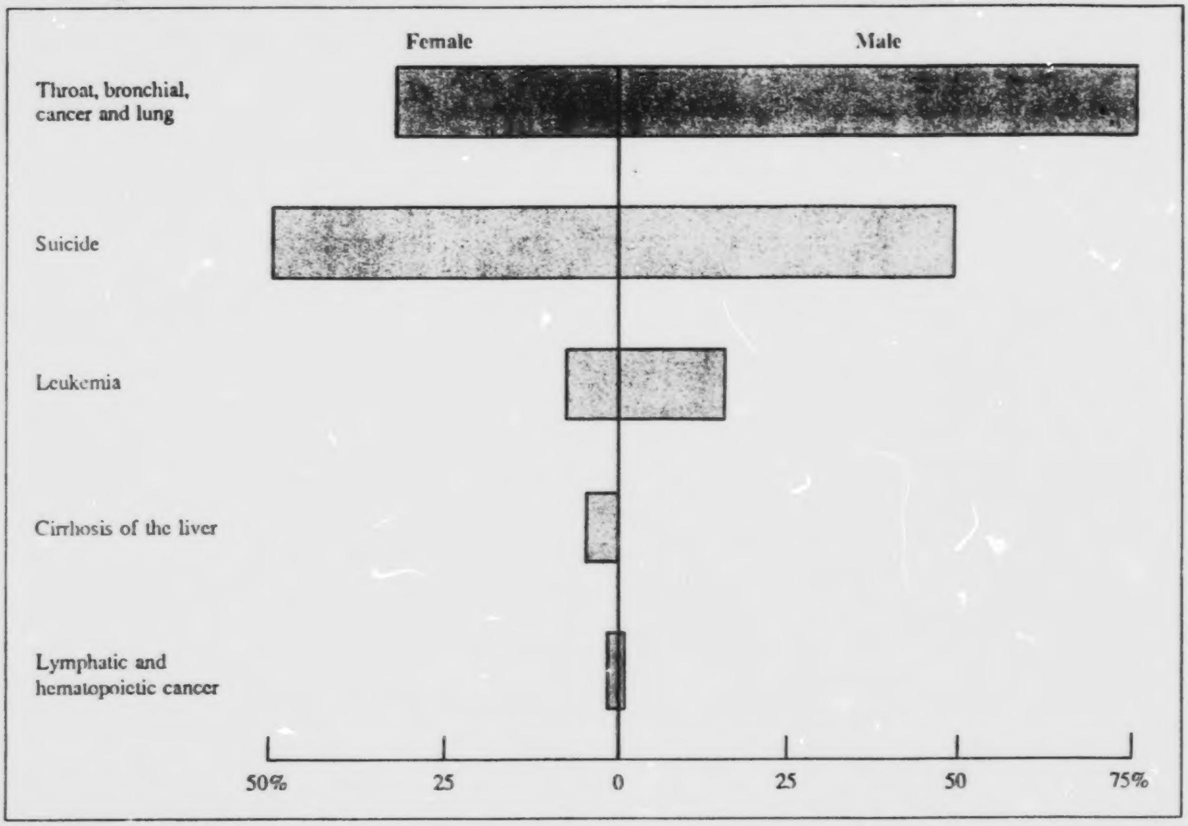
A better knowledge of predisposing factors is thus essential for cancer prevention, and it is certainly prevention that is needed, not simply better diagnosis and treatment. Assuming that the rates for accidental death and death due to circulatory disorders continue to decline at the same pace, and taking into account the effects of aging, cancer may well top the death list by the year 2000. In addition, the steep rise in the incidence of breast cancer among women can only lead to similarly pessimistic predictions (Chart 5-8).

The Need for a New Indicator

The decline of highly fatal infectious diseases and the relatively new phenomenon of chronic disabling illness for accident survivors, coupled with the emergence of new demands related to the quality of life, have prompted the search for new indicators to measure healthy life expectancy. In this context, the World Health Organization (WHO), as part of its efforts to assess the consequences of illness, has attempted to clarify the concepts of disability

Chart 5-5

Percentage Variation in Major Causes of Death on the Rise, by Sex, Quebec, 1971-80



SOURCE L. Roy, *Des victoires sur la mort.*

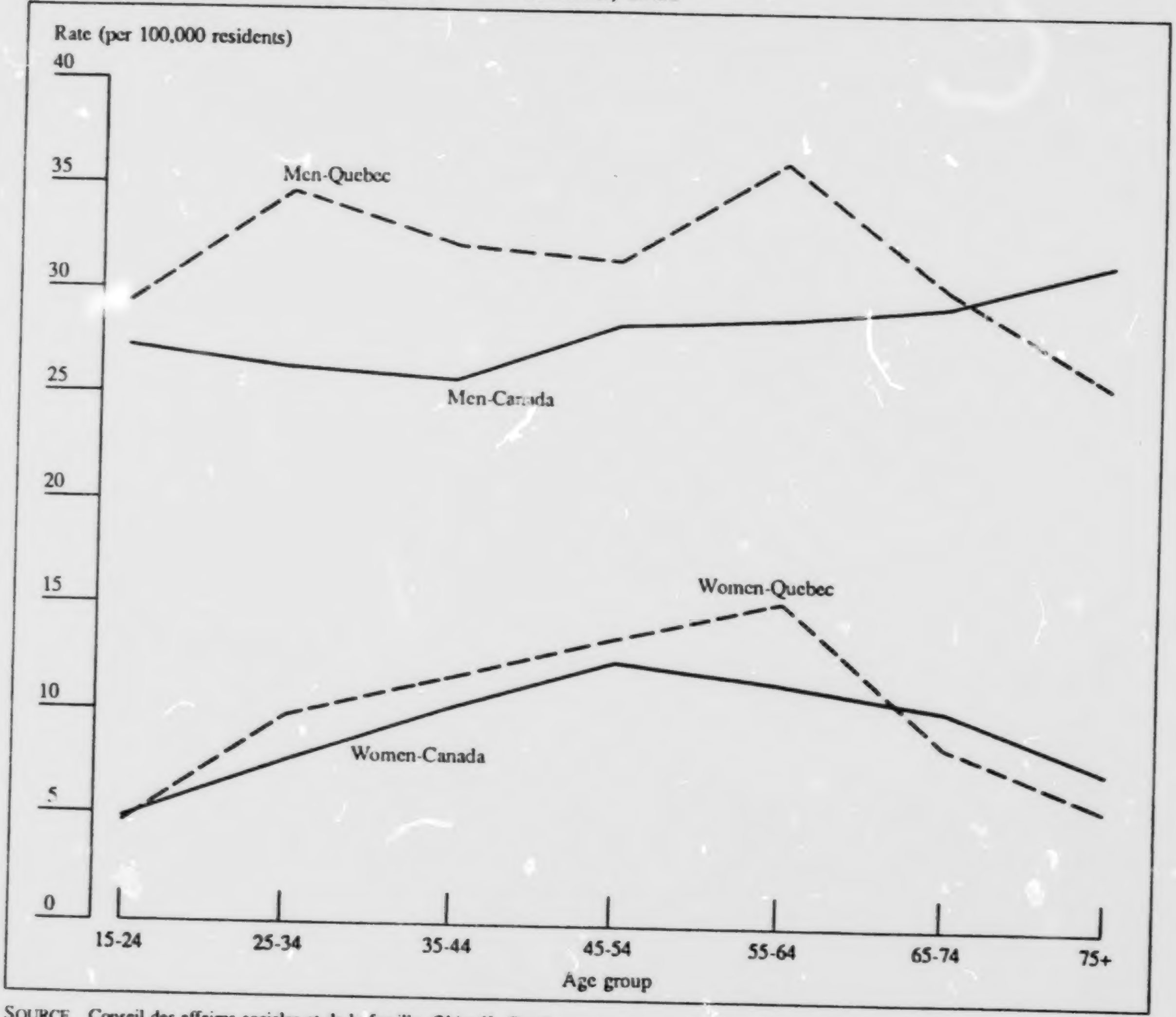
(impairment, disability, handicap) and has proposed a classification of disabilities and social handicaps based on five main criteria [labelled "survival roles"]: physical mobility, physical independence, occupation, social integration, and financial self-sufficiency (Wood 1980; WHO 1980).

For its part, the Conseil has developed a composite indicator combining mortality (life expectancy) with the curtailment of normal activities (paid employment, family life, study and leisure activities), and called "healthy life expectancy." The method used was that proposed by Sullivan in the 1970s. It consists of deriving from a current mortality table the number of years a person has lived in a particular state of disability and calculating a new life expectancy figure based on this information (Sullivan 1971).

We have already seen that, according to this indicator, healthy life expectancy rarely exceeds 60 years of age – 62 or 63 if the indicator is weighted according to the severity of the affliction (Péron and Strohmenger 1985, pp. 129-36; Wilkins and Adams 1983*b*). The adoption of healthy life expectancy would also have an impact on the ranking of diseases according to their incidence. Indeed, the ranking of the major diseases will undoubtedly change both in terms of resource allocation for both prevention and treatment and in terms of research financing. For example, we know that the major cause of curtailment of activities in the general population is the group of osteo-articulatory diseases. The share of curtailed activities attributable to this cause has been steadily rising. Yet these diseases are currently at the bottom of the list of the 10 major disease categories in terms of resource allocation, both for treatment and research financing (Camirand 1983, p. 37).

Chart 5-6

Comparative Suicide Rates, Quebec and Canada, 1981



SOURCE Conseil des affaires sociales et de la famille, *Objectif: Santé*.

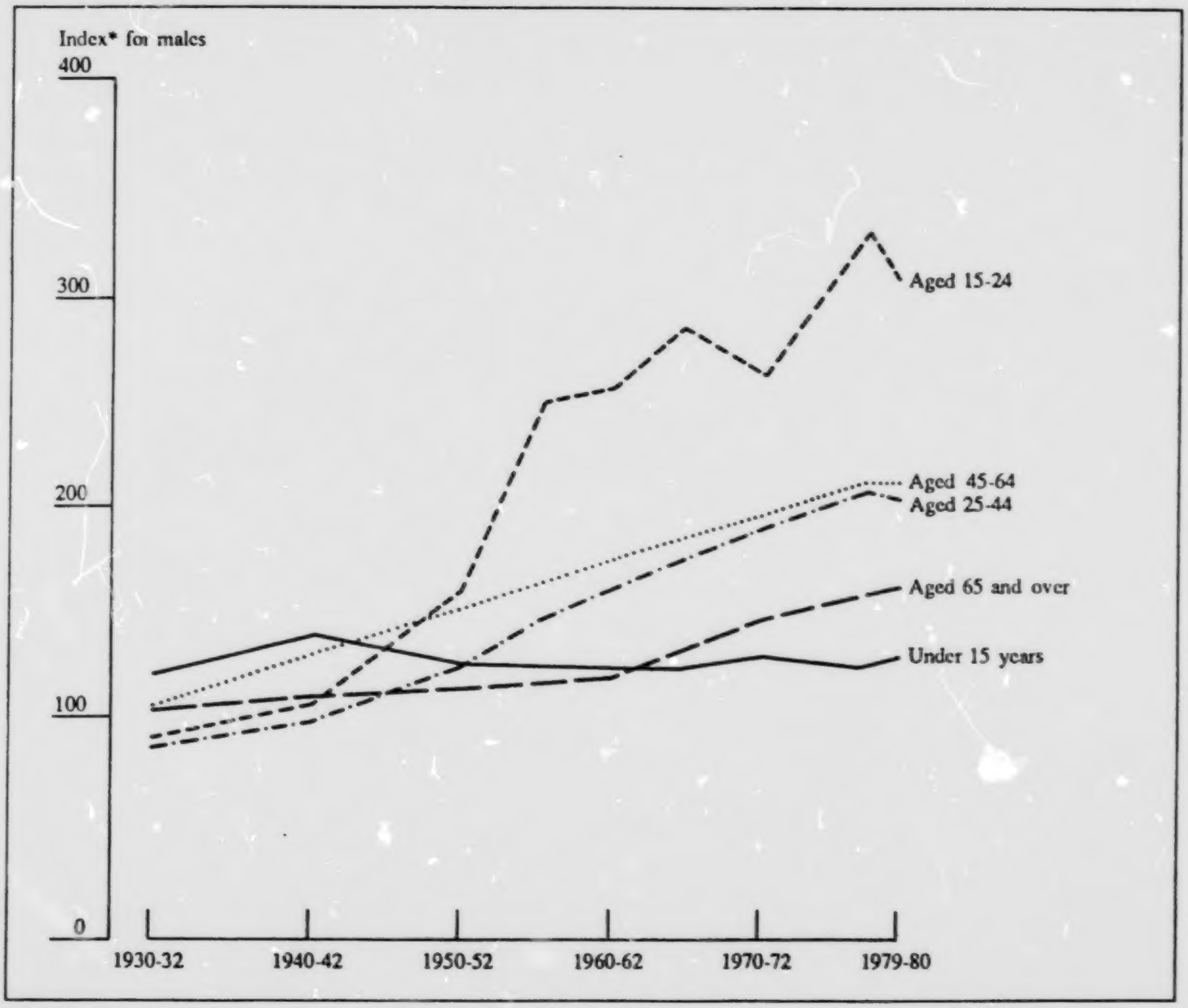
Two other consequences of adopting the healthy-life-expectancy concept should be noted: first, putting the emphasis on day-to-day living inevitably results in greater importance being given to productivity and the value of human resources throughout economically productive life.

Another advantage is that the link between this indicator and the purpose of the health care system (alleviating pain, re-establishing functional capacity, etc.) is much closer than that between life expectancy in the traditional sense and the true goal of the health care system.

The Conseil is continuing its investigations into the choice of indicators, because reconciling the goals of the health care system and those of health policy can only point the way to the future. These investigations are part of a general framework for a scenario for the year 2000.

Chart 5-7

Index* of Male/Female Mortality Trends, Selected Age Groups, Quebec, 1930-32 to 1979-81 (Female Mortality Rate = 100)



*Male mortality rate / Female mortality rate x 100

SOURCE L. Roy, *Des victoires sur la mort.*

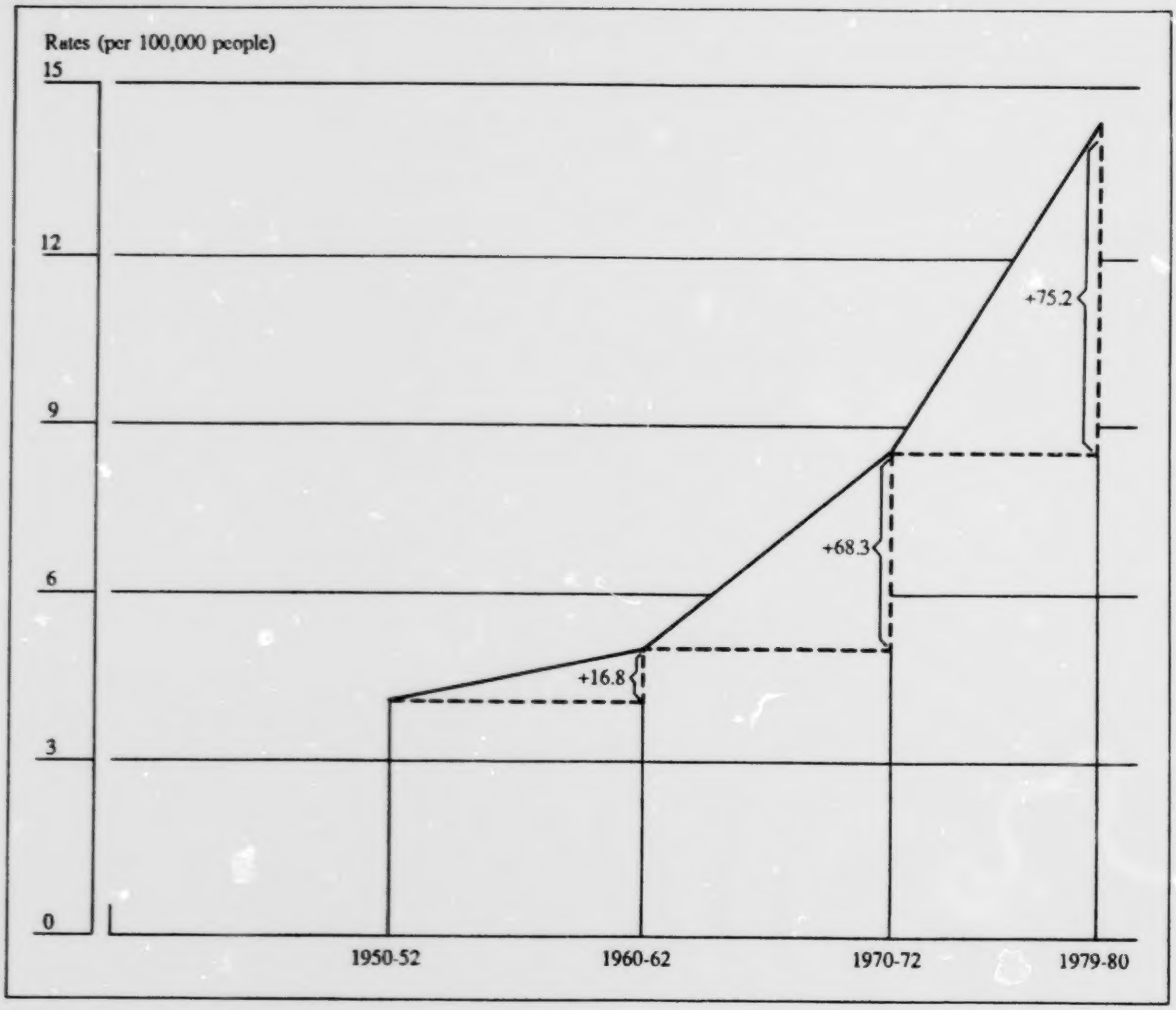
Scenario for the Year 2000

What is now required is the construction of a scenario for the year 2000. Naturally, such a scenario must take historical developments into account and respect the country's social and economic policies. As is happening elsewhere in the world, Quebec's population growth rate is slowing and the population as a whole is growing older. Demographic projections suggest that the number of elderly persons will double by the year 2000.

Other demographic and social trends that will help to shape health policy include: the reduction in the child dependency ratio as the postwar "baby boom" generation grows older, the increased labour market participation by women, the increase in single households and single-

Chart 5-8

Lung Cancer: Standardized Rates and Variation in Female Mortality Rate, Quebec, 1950-52 to 1979-80



SOURCE L. Roy, *Des victoires sur la mort.*

parent families, and a steady drop in absolute poverty despite the slower economy.

In designing and implementing a health policy, a higher priority must be placed to prevention-oriented measures (in the sense of primary prevention), rather than on measures that simply help reduce mortality rates. In terms of health strategies, the development of a reasoned, realistic, and varied set of strategies should prevail over a one-dimensional approach.

The risks to human health are often rooted in human behaviour. To the extent that corrective measures can reduce these risks to manageable levels, people must assume a greater share of the individual and collective responsibility for doing so. While the individual often bears considerable responsibility, however, the inequalities in terms of susceptibility to disease and death nonetheless depend on living standards and conditions. Those who lack information, who are the lowest-paid, who endure the worst working conditions, who live in slums, and who sink into despair are often one and the same group. Their many needs go far beyond medical requirements. These are vulnerable groups, and they must become a high priority. That is why health policy will always depend on the existence of fair and equitable social policies in the areas of living standards and education. These two policy areas must, however, be considered separately, as social policy is a prerequisite for health policy.

Thus it is essential to put in place policies aimed at social development, at raising levels of schooling and at eliminating inequality, in order to foster a quality of life that will be socially and economically fulfilling.

Goals of Health Policy

The primary goal is to permit a healthy life; its corollary, in the scenario for the year 2000, is to enable people to reach old age in good health. Growing old is a natural function of living. To try to avoid it is unrealistic, but to enjoy better health while growing old is a realistic goal.

The second goal is to reduce the incidence and impact of the most severe health problems in our society. These fall into four categories:

- congenital disorders;
- geriatric disorders;
- psychiatric problems; and
- disabling diseases and conditions that are considered as preventable or as responsive to treatment.

Besides the major diseases, there are a great many problems treated in a doctor's office – minor, everyday illnesses – that can be prevented, as well as psychosomatic problems related to individual lifestyle and to the response to stress. In the future, our response to this challenge can no longer be limited to treating the symptoms; the cause or causes must be studied, and our knowledge of how to treat these diseases must be broadened. In this area, the demands of a better schooled and better informed public will lead to the more widespread use of self-diagnosis and self-treatment, and to increased recognition of the powers of self-healing and of the therapeutic value of family and friends.

But restoring health will always remain more costly than maintaining it. So in order to increase healthy life expectancy from the present 60 years to 70 years by the year 2000, effective prevention, protection, and health maintenance strategies must be employed. Without taking an inventory of all practicable strategies, there are six major ones that can be discussed in the context of our scenario for the year 2000.

Six Essential Strategies

To live and grow old in health, to increase healthy life expectancy, to alleviate the most severe health problems, to prevent minor, everyday illnesses, and to raise the quality of life, six basic strategies are necessary:

1. Research;

2. Information, public awareness and education;

3. Financial incentives;

4. Legislation;

5. Environmental intervention; and

6. Changing the financial arrangements for personal health care and the activities of medical personnel.

It must be noted that these strategies are not mutually exclusive and that an appropriate mix of several strategies will generally be more effective than a single approach.

1. Research — While research can be focused on any of the five main determinants of health – i.e., genetics, individual behaviour, physical environment, social environment, and personal health care services – for the purposes of this paper, I will restrict the discussion to an examination of promising new developments in recent research aimed at formulating a true health policy.

a) Identification of Individual Genetic Programs

The significant advances made in the fields of immunogenetics, molecular biology, and enzymology over the last 20 years have fundamentally changed our perception of what is innate and what is acquired. Now that chromosome makeup can be determined at birth and even before birth, now that HLA (Human Locus Antigen) tissue groups have been discovered, we have a better understanding of how and why individuals react differently to disease and to aging. Our inherited traits can appear in different forms:

– forms that are irreversible at the outset – i.e., genetic defects. Only genetic counselling before conception can avoid the manifestation of genetic disorders.

– latent forms – i.e., the hereditary predispositions we all have that are passed on at the same time as our individual characteristics. For example, the predisposition towards hypertension has been linked to high cell-membrane permeability to sodium in a certain percentage of people. Thus hypertension selectively strikes certain members of a group subjected to identical nutritional and high stress conditions.

This is an "anthropological" approach to disease, in the terminology of Jacques Ruffié (1976).

b) Analysis of Family and Group Risk Factors

Multifactor analysis, developed by modern epidemiology, enables those in a group of healthy individuals who are predisposed to certain diseases to be identified, so that action can be taken with respect to the predisposing factors.

c) Study of Man in Relation to His Development and His Living Environment

Behavioural sciences have joined forces with basic and clinical science to meet the need for prevention. The task here is to adapt each person's environment to his/her possibilities and to adapt the environment of larger groups to their collective potential.

2. Information, public awareness and education — While the strategy based on information, public awareness, and education was previously considered the least effective of all, this option remains essential for achieving the social consensus required in a democracy, for implementing a system of financial incentives, and for undertaking legislative action and direct intervention in the physical environment. Particular attention must be paid to groups that act as intermediaries – health professionals, teachers, and media representatives. For example, in the context of the scenario for the year 2000, the public must be made aware that illness is not an integral part of the aging process; it is normal to grow old, but illness is a consequence of living conditions and genetic factors. In addition, the crucial development of the self-diagnosis and treatment option relies heavily on this strategy; it will become of utmost importance in the future.

3. Financial incentives — This is an old but still popular strategy; here it refers to taxes, income supplements, income tax deductions, and insurance premiums.

The effect of these incentives on health can be positive or negative, direct (pay bonuses) or indirect (on-the-job exercise programs). They can be used by employers and employees, and they can be one-time or long-term.

Many studies have looked at the relative effectiveness of financial incentives according to their type and how they are used. It is generally agreed that they have an immediate impact on the quality of life in the short term, particularly when they are not aimed at individuals but at groups of people with the same objectives (Warner and Murt 1984). Their impact on activity curtailment and on increased productivity, however, is felt over the long term.

4. Legislation — This strategy relies primarily on governments at all levels. Its justification is that the state, in many circumstances, must protect its citizens from detrimental outside influences and from foreign attack.

Such legislation generally requires that a public awareness and information campaign be carried out beforehand to inform the public about the reasons for the legislative action. Legislation represents coercion, since the state must ensure that its laws and regulations are respected. Sometimes negative financial incentives (fines, and so on) can be used to reinforce the actual legislation.

5. Environmental intervention — This strategy is considered one of the most effective, and has a long historical tradition, as noted by McKeown (1982). However, new risks (acid rain, insecticides, air and water pollution, toxic substances, etc.) have made this a much more complicated and expensive option. Health objectives tend to become confused with conservation goals based on esthetic and recreational concerns, while it is becoming increasingly difficult to assess the actual effects of these new problems on health. Here again, the information and financial incentive strategies must be used in conjunction with this fifth strategy to obtain good results.

6. Changes in financing personal health care and the activities of medical personnel — Much could be said about this strategy, but the new experiments in the United States with HMOs (health maintenance organizations) should be singled out (Mullen and Zapka 1981). On the subject of payments to doctors and other medical personnel, it is difficult to come out in favour of one or another of the existing payment systems,

but it is clear that financial incentives aimed at preserving health and facilitating a return to a normal life must be integrated into the payment system in order to achieve convincing results in terms of cost-efficiency and cost/benefit comparisons (Rowe and Bisbee 1978). It has been amply demonstrated that traditional approaches to prevention, such as annual checkups and laboratory tests, do not produce the desired levels of benefits for the money invested (CMA 1979).

It is for this reason that interest is currently turning to health protection through a comprehensive insurance system that would cover both health maintenance and early treatment of disease, in order to avoid hospitalization and the costs associated with disability (Harrington and Newcomer 1985).

This approach is extremely promising and should be tried out on a trial basis in Quebec as an integral part of the scenario for the year 2000.

Conclusion

As a conclusion to this paper on advances in prevention, protection, and health enhancement, let me stress that what is needed for the future is a positive approach.

Health policy goals should be defined in different terms than they have been in the past, when general and specific mortality rates (Castonguay Report 1970) or mortality prior to age 70 (Lalonde Report 1974) were used to measure policy impact.

These policy goals, in our opinion, should be based on ensuring a socially and economically fulfilling life (WHO 1984*c*), on increasing healthy life expectancy (CASF 1984, p. 37), and, especially, on improving the quality of life.

As part of a scenario for the year 2000, the Conseil recommends implementing the following six-point program aimed at protecting health when it is threatened by collective problems and at promoting health through the assumption of individual responsibility for health in the home, at school, at work, and at play:

- a strategy of basic epidemiological and behavioural research;
- a strategy of information, public awareness, and education aimed at the general public and at intermediary groups;
- a strategy of both positive and negative financial incentives;
- a strategy of legislation aimed at public protection;
- a strategy of environmental intervention; and
- a strategy of changing the financial arrangements for personal health care.

Donald T. Wigle

Introduction

Other countries (U.S. Department of Health, Education and Welfare 1979) and even local jurisdiction (Wellington-Dufferin District Health Council 1984) have established quantitative health objectives, but none have been adopted at the national level in Canada. A preliminary effort was undertaken by the Deputy Ministers of Health in 1982 at the Canadian level. Quebec has specified general health goals but did not quantify projected improvements (CASF 1984).

In June 1984, the Canadian Public Health Association (CPHA) adopted a position paper and resolution that emphasized the need for national health planning. The resolution called upon CPHA to "convene or seek to have convened a national conference on health goals and strategies." Representatives from CPHA, l'Association pour la Santé publique du Québec, and the Ontario Public Health Association met to develop this proposal. They recognized the need not only for a conference but also for the establishment, at both the provincial and national levels, of a set of agreed – upon priorities and strategies. It was also recognized that there is a need to install a mechanism, again both provincially and federally, to monitor the implementation of these health strategies. A draft proposal and action plan was sent to the federal, provincial, and territorial health ministers in mid-1985 (Dafoe 1986).

My purpose here is to present a basis for the specification of quantitative health objectives for Canada. It is not my intent to cover exhaustively the entire range of health problems but rather to illustrate a rationale for quantifying objectives.

U.S. Approach

U.S. health objectives are rooted in the 1979 report of the U.S. Surgeon General, *Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention*. This report concluded that the major health gains of this century have resulted, in large measure, from preventive measures, including sanitation, improved housing, nutrition, immunization and lifestyle changes. The report defined five major goals for the year 1990, one for each of the major stages of life – namely,

- to continue to improve infant health and, by 1990, to reduce infant mortality by at least 35 per cent – to fewer than 9 deaths per 1,000 live births;
- to improve child health, foster optimal childhood development, and, by 1990, to reduce deaths among children aged 1 to 14 years by at least 20 per cent – to fewer than 34 per 100,000;
- to improve the health and habits of adolescents and young people and, by 1990, to reduce deaths among persons aged 15 to 24 by at least 20 per cent – to fewer than 93 per 100,000;
- to improve the health of adults and, by 1990, to reduce deaths among people aged 25 to 64 by at least 25 per cent – to fewer than 400 per 100,000; and
- to improve the health quality of life for older adults and, by 1990, to reduce the average annual number of days of restricted activity resulting from acute and chronic conditions by 20 per cent – to fewer than 30 days per year for people aged 65 and older.

In 1980, the U.S. Public Health Service published "Promoting Health/Preventing Disease: Objectives for the Nation." There were 226 objectives, within 15 priority subject areas, chosen on the basis of their potential contribution to the five major goals described above. The objectives were developed by over 500 individuals and organizational representatives from public and private sectors.

The 15 priority subject areas are listed in Table 5-2. The objectives for each priority area are as follows:

- improved health status;
- reduced risk factors;
- increased public or professional awareness,
- improved services or protection; and
- improved surveillance or evaluation systems.

Table 5-2

Health Priority Subject Areas and Levels of Funding, United States, 1984

	$ Millions
Family planning	381
Pregnancy, infant health	367
Immunization	141
Sexually transmitted disease control	73
High blood pressure control	18
Toxic agent and radiation control	262
Occupational safety and health	93
Accident prevention and injury control	9
Fluoridation and dental health	32
Surveillance and control of infectious diseases	243
Smoking control	21
Alcohol and drug misuse prevention	127
Improved nutrition	575
Physical fitness and exercise	10
Control of stress and violent behaviour	9
Cross-cutting	1,462
Total	3,824

SOURCE U.S. Department of Health, Education, and Welfare, "Promoting Health/Preventing Disease: Objectives for the Nation," Hyattsville, Maryland (1980), and U.S. Department of Health and Human Services, *Prevention, 1984-85* (Washington, D.C.: U.S. Government Printing Office, 1985).

Implementation plans for selected objectives within each of the 15 priority areas were developed by the U.S. Department of Health and Human Services agency (1985*a*) that was assigned lead responsibility for a particular priority area in conjunction with other relevant agencies. Components of the implementation plan for each objective are as follows;

- education and information measures;
- grants to states and service delivery measures;
- technical assistance/co-operative measures;
- economic and other incentive measures; and
- research and surveillance measures.

Examples of objectives and implementation steps for one priority area – smoking control – are presented in

Figure 5-1

Example of Implementation Plan to Achieve a Specific Health Objective – Namely, Smoking Control, United States, 1984

Smoking control	One of the 15 subject areas addressed by health objectives.
Reduced risk factors	One of the five categories of health objectives for each subject area. Example: By 1990, the proportion of children and youths aged 12 to 18 years who smoke should be reduced to below 6 per cent (from 11.7 per cent in 1979).
Education and information measures	One of the five components of the implementation plan for each of the 15 subject areas. Example: Develop information campaigns on smoking, with emphasis on women and young adults.

Figure 5-1. It is interesting to note that the United States has achieved one of its early objectives pertaining to smoking control: strong, rotating warnings on cigarette ads and packaging are now required by law and already appeared in ads in September 1985.

In 1984 the U.S. federal government committed almost $4 billion to the achievement of health objectives. These funds were administered through a formidable organization within the U.S. Department of Health and Human Services (Table 5-3).

Table 5-3

Federal Health Agencies with Sickness Prevention Programs, United States, 1984

	$ Millions
Department of Health and Human Services:	
Public Health Services	
Alcohol, Drug Abuse and Mental Health Administration	62
Centers for Disease Control (6)	380
Food and Drug Administration	393
Health Resources and Services Administration	1,013
National Institutes of Health (11)	1,051
Office of the Assistant Secretary for Health	163
Health Care Financing Administration	284
Office of Community Services	6
Office of Human Development Services	472
Total	3,824

Canadian Experience

The Health Promotion Committee of the Wellington-Dufferin District Health Council published a discussion paper on health promotion goals in 1984. Using a broad definition of health promotion – namely, "... to enhance health and to prevent accidents or the onset of disease by affecting change in individual lifestyle, the environment and human biology" – goals were developed after specifying:

- a list of serious health problems;
- risk factors for these problems; and
- relevant health promotion activities for each risk factor

The Committee specified their five highest-priority goals:

- to reduce smoking;
- to improve the standard of nutrition;
- to increase physical activity;
- to reduce the abuse of alcohol;
- to improve marital and family functioning, and the quality of parenting;

and reviewed alternative strategies and existing programs for each. The latter included a survey of existing health promotion activities in schools, workplaces and the community.

Health goals for Quebec were developed by a multidisciplinary committee reporting to the Council of Social and Family Affairs (CASF 1984). Prior to this, that Council reviewed and published three monographs on the health status of Quebecers and one on the cost of illnesses (Dillard 1983; Roy 1983; Levasseur 1983; Camirand 1983). Major health problems were defined, using these criteria: frequency, severity, social impact, size of problem in Quebec compared with other provinces and other developed countries, inequities between population subgroups, the feasibility of intervention, direct health care costs, importance as a cause of premature death/disability and public concern.

Ten health goals for Quebec were specified, covering all age groups:

Age 0-5

- to reduce serious birth defects and their impact on the infant and family; and
- to encourage emotional and social development.

Age 6-24

- to reduce motor vehicle accident deaths;
- to reduce unwanted pregnancies and their impact on adolescents; and
- to reduce the incidence and severity of mental health problems in the age group 15 to 24.

Age 25-64

- to reduce the incidence, severity, and impact of physical and mental health problems related to the workplace;
- to reduce the incidence and impact of cardiovascular disease;
- to reduce the incidence, severity, and impact of bone and joint problems; and
- to reduce the incidence and impact of cancer.

Age 65 and over

- to encourage autonomy of the elderly.

The authors described three types of intervention to attain those goals: 1) reduce the incidence of health problems through primary prevention; 2) reduce severity of disease through health care; and 3) reduce the impact of disease through social supports. They also outlined specific opportunities for achieving each. For example, to reduce the incidence and impact of cancer, their suggestions were to: 1) increase tobacco controls; 2) educate physicians to treat patients within their environment; and 3) provide material and psychologic support to affected persons and their families.

Why Set Goals and Objectives?

It is anticipated that the setting of well-defined national health goals and objectives would encourage the wise use of resources to improve the health of Canadians. More importantly, widely supported national goals would provide a positive challenge to the public, to health professionals, and to politicians and should accelerate the improvement of disease-free life expectancy. By setting quantified objectives and evaluating progress over time, programs that need strengthening can be identified. This will be greatly facilitated if governments and voluntary agencies make commitments to meet the stated objectives.

Public Policy Implications of Health Goals and Objectives

The achievement of worthwhile health goals and objectives requires organization, funding and legislation (Figure 5-2).

Canada lacks many of the organizational elements that the United States has in place to carry out the interventions necessary to achieve the health objectives (Table 5-3). Canada has no counterpart for the 11 National Institutes of Health and has one centre for disease control compared with the six U.S. centres, which collectively have 40 times the budget of the Canadian centre. Canada not only appears to assign proportionately less resources to prevention, but it lacks federal legislation, particularly in the areas of occupational health and tobacco control.

Figure 5-2

Public Policy Implications of Health Objectives

Organization	Need for: – National institutes (research). – National centres (disease control, health promotion.
Funding	Needs are large but represent an investment in the future health of the nation. Substantial offsets: – Increased tax revenues from tobacco, alcohol. – Reduced illness-related costs.
Legislation	Provide mandate, funding and accountability for national programs. Provide basis for controls of hazardous agents and environments.

Figure 5-3

General Public Health Model

	Target
Primary prevention:	
Health promotion Health protection	Host Agent Physical environment
Social and economic policies	Socio-economic environment
Secondary and tertiary prevention:	
Health care Social supports	Reduced impact regarding disability or premature death

Health Objectives for Canada

A Public Health Model

All health problems can be considered to originate from interactions between the host (i.e., people), an agent (e.g., a toxic chemical), and the general environment (both the physical and the socio-economic environment).

The three general types of intervention to control health problems are health promotion, health protection, and health care (Figure 5-3). Application of the primary prevention portion of the model to tobacco control is illustrated in Figure 5-4. There is general agreement that interventions must be directed to all three targets (host, agent, environment) to achieve a substantial impact on the tobacco problem. The classification of certain interventions is somewhat arbitrary (e.g., taxation policy could be assigned either to agent or to socio-economic environment).

Formulation of Objectives

The approaches described above have in common this sequence of events:

- identification of major health problems;
- assessment of major risk factors and potential for intervention; and
- a mechanism for reaching consensus.

Only the United States has gone beyond this to develop and execute implementation plans. The 1985 CPHA position paper mentioned above should lead to widely supported national health goals and objectives for Canada.

I suggest that three main goals be considered: 1) improvement of health status; 2) reduction of the prevalence of major risk factors; and 3) improvement of our knowledge of health status and risk factors. Quantitative objectives can be set arbitrarily or can be based on past experience. We should aim to: a) do at least as well in the future as in the past; b) correct deficiencies of the past; c) emphasize primary prevention interventions among youth and young families; and d) accept that secondary and tertiary prevention is often the best we can do for those who have had many years of exposure to risk factors and have developed chronic diseases.

Examples of proposed health objectives for Canada are given in Tables 5-4 to 5-7, inclusive. Age-specific death

Figure 5-4

Public Health Model to Achieve a Specific Health Objective – Namely, Reduction of the Risk of Lung Cancer

	Intervention		
	Health protection	Health promotion	Health care
Targets:			
Host	Tobacco restraint legislation (e.g., illegal to sell to persons under age 18).	Education: – school; – media.	Smoking cessation clinics.
		Assertiveness training.	
		Fitness programs.	
		Role models.	
		Monitor prevalence and attributes of smokers.	
		Financial incentives to avoid or quit smoking.	
Agent	Taxation.		
	Restricted advertising, promotion.		
	Licensing of tobacco additives.		
	Warnings on packages: – health effects; – addiction; – toxic chemicals.		
	Limits on toxic chemicals.		
	Restricted vending machines.		
Environment	Smoke-free public buildings and workplaces.		
	Affirmative action (i.e., non-smokers hired preferentially).		

rates should be reduced over the period 1983 to 2000 by about the same proportion as in the two earlier 16-year periods (Table 5-4). Thus the overall risk of death should be reduced by 25 per cent, with larger proportional decreases for young persons.

By the year 2000, disparities in the risk of death among low-income groups should be reduced to 50 per cent of the 1971 levels (Table 5-5); the prevalence of smoking among persons aged 12 to 29 years should be reduced to less than 10 per cent (Table 5-6); and the prevalence of

Table 5-4

Reduction of Death Rates: One Objective for Improving Health Status

	Reduction of death rate, by age					
	< 1	0-24	25-54	55-74	75 and over	All ages
	(Per cent)					
Actual:						
1951-67	–43	–37	–19	–13	–18	–19
1967-83	–60	–46	–26	–20	–20	–24
Specific objectives 1983-2000	–50	–50	–25	–20	–20	–25

Table 5-5

Reduction of Disparities in Risk of Death, by Income Level: Another Objective for Improving Health Status[1]

	Excess risk of death among lowest-income quintile,[2] by age group					
	≤ 1	1-14	15-34	35-64	65 and over	All ages
	(Per cent)					
Excess risk, 1971	90	70	50	70	15	35
Specific objectives by year 2000	50	35	25	35	10	20

[1] "Improved health status" is the first of the five objectives for each of the 15 priority areas referred to in the text.
[2] That is, the approximate excess relative to risk among highest-income quintile.
SOURCE Health and Welfare Canada, *Mortality by Income Level in Urban Canada* (Ottawa: HWC, 1980).

severe hypertension (defined here as diastolic blood pressure of at least 100mmHg) should be reduced to less than 2 per cent (Table 5-7).

There are serious gaps in our knowledge concerning health status and modifiable risk factors for certain major health problems. In order to assess the nutritional status of Canadians and to improve our knowledge of certain risk factors, additional specific objectives are presented here – for example:

- to conduct a national survey of nutritional status by 1990;
- to determine on a quarterly basis the prevalence of cigarette smoking, by brand, among youths and young adults;
- to identify major modifiable risk factors for Alzheimer's disease by the year 2000; and
- to assess the impact of dietary factors in the prevention of colorectal cancer by 1995.

We have no data on the prevalence of Alzheimer's disease in Canada. Even for diabetes there are serious information gaps with regard to the prevalence of this disease and its complications. We need to know much more about modifiable risk factors for a number of major health problems, including arthritis, chronic neurological diseases and mental disorders.

Intervening to Achieve Health Objectives

Intervention programs will not be discussed in detail here. Rather, the author wishes to emphasize the need to develop and apply mass intervention programs and to avoid inefficient programs directed at individuals or small groups. In a recent article, Chapman discussed the

Table 5-6

Reduction of Smoking: One Objective for Reducing the Prevalence of Major Risk Factors[1]

	Prevalence of smoking					
	Age 12-19			Age 20-29		
	Male	Female	Total	Male	Female	Total
	(Per cent)					
Actual prevalence:						
1983	22	25	24	44	36	40
1985	21	25	23	46	49	48
Specific objective by year 2000	≤ 10 per cent					

[1] "Reduced risk factors" is the second objective for each of the 15 priority areas referred to in the text.

SOURCE Health and Welfare Canada.

Table 5-7

Reduction of Hypertension:[1] Another Objective for Reducing the Prevalence of Major Risk Factors[2]

	Prevalence of hypertension			
	Age 20-64		Age 65 and over	
	Male	Female	Male	Female
	(Per cent)			
Actual prevalence:				
1970-72	8.5	8.3	20.5	18.7
1981	6.5	2.8	5.9	8.5
Specific objective by year 2000	≤ 2.0	≤ 2.0	≤ 2.0	≤ 2.0

[1] "Hypertension" is defined as diastolic blood pressure of 100mmHg or greater.

[2] "Reduced risk factors" is the second objective for each of the 15 priority areas referred to in the text.

SOURCE Health and Welfare Canada.

inefficiency of smoking cessation clinics in the United Kingdom (Chapman 1985). The 55 such clinics in the United Kingdom appeared to result in smoking cessation by fewer than 2,000 persons during 1983; however, public surveys revealed that 42 per cent, or over 8 million, of the active smokers in that country were determined to quit. Thus clinics were reaching only 0.02 per cent of the market for smoking cessation. Similar analysis in the United States revealed that smoking cessation clinics were reaching less than 0.1 per cent of smokers. In contrast, workplace smoking bans have resulted in up to 40 per cent of smokers quitting their habit within a few months after initiation of such policies. It is clear that this approach provides a workplace environment that is favourable to the majority of smokers who already want to quit.

Past successes and cost-effectiveness considerations both justify the conclusion that mass interventions aimed at optimizing the physical and social environments will almost always be "the way to go" in public health to achieve the largest benefit for the largest number of people (Rose 1985).

Governmental Responsibilities

The view that health is primarily a provincial responsibility is widespread. The only health-related interventions that are mainly provincial responsibilities, however, are occupational health and safety, institutional education and health care delivery. The federal government has a general responsibility for the health of Canadians and specific responsibilities to control health hazards involving more than one province or another country. The federal government has taken the responsibility of reducing regional economic disparities and it is only an extension of this principle to suggest that the federal government should address regional disparities in health status.

In addition, the federal government has the main responsibility for the control of foods, drugs and many consumer products (Figure 5-5). The two levels of government share responsibility for most of the other interventions aimed at protecting and preserving the health of Canadians.

Obstacles

Efforts to achieve health objectives will inevitably encounter resistance. Examples, using the host/agent/environment model for the control of smoking, are given in Figure 5-6. Intervention programs should be designed to counteract these obstacles. In particular, it is necessary to reach disadvantaged segments of the population including the poor, the unemployed, the elderly, and those who are geographically or socially isolated.

Conclusion

The formulation of national health objectives will facilitate the efficient use of resources to improve the

Figure 5-5

Governmental Responsibilities for Health Protection and the Promotion of Good Health

Regulation	Legal requirements to ensure safe, effective products (foods, drugs, pesticides, etc.);	F
	Standards for outdoor air and drinking water;	S
	Occupational health and safety standards;	P*
	Controls over false or misleading advertising; and	S
	Restrictions on hazardous, non-medical drugs.	F
Economic controls	Measures to ensure high employments;	S
	Social programs for elderly, disabled and low-income groups;	S
	Funding of health care; and	S
	Taxation of products to discourage their use (e.g., tobacco or excess use (e.g., alcohol).	S
Education	Responsibility to ensure public awareness of avoidable health hazards.	S
Research and surveillance	Identification of high-risk populations;	S
	Identification of factors that impair health;	S
	Risk assessment of hazardous exposures; and	S
	Evaluation of public health programs.	S

F = Federal.
P = Provincial.
S = Shared.
* = Mainly.

health of Canadians, particularly through primary prevention of health problems. There are no simple answers to the issue of rising health care costs. The history of public health, however, tells us that mass intervention programs have the greatest impact on the health of populations (e.g , fluoridation of drinking water, immunization).

The major health problems of today cannot be solved by "politically safe" measures such as immunization. Action is required to educate people about avoidable health risks; legislation is required to ensure control of hazardous agents; and a strong economy is fundamental to providing a socio-economic environment conducive to good health.

The greatest gains will come through interventions aimed at primary prevention. In addition, these must focus on youth to avoid the irreversible, or partially irreversible, risks associated with many risk factors such as smoking. Emphasis should be placed on mass programs that target the host, agent, and environment.

Figure 5-6

Obstacles to the Achievement of a Specific Health Objective – Namely, Reduction of the Risk of Lung Cancer

Host	Age (duration of exposure).
	Poverty, unemployment.
	Low education.
Agent	Addiction.
	Advertising/promotion.
	Inadequate, obscure warnings.
	Low price.
	Easy access.
Environment	Inconsistent media reporting on hazards of smoking.
	Lack of restrictions on smoking in indoor public and work spaces.
	Political lobbying by tobacco interests (manufacturers, farmers).
	Purchased social acceptibility of industry (grants to arts, sports groups, etc.).
	Control of media through advertising revenues.

Health-status and risk-factor surveys are required to ensure that adequate progress is made towards objectives and that intervention programs reach the disadvantaged.

The inevitable consequences of aging and failures in primary prevention programs must be countered by social and health care programs. These, too, must be evaluated to ensure the efficient use of resources.

Finally, the serious information gaps concerning health status and the identification of modifiable risk factors for several of the major health problems must be addressed by targeted research programs.

Carol Buck

Dr. James Fries (1984) has captured our imagination with his concept of compressing morbidity. The idea is that human death will become akin to that of light bulbs. A light bulb does indeed stay healthy until the moment of its exasperating sudden death. Humans, on the other hand, have a pattern of demise that has been likened to that of dishes in our kitchen. Some of the dishes are irretrievably smashed early in their career, but most are subject to a series of insults that leave them chipped and cracked until finally they fall apart after years of imperfect life.

The ideas expressed by Fries suggest that we could live out our allotted span not as the dishes do, but as the light bulbs do, with only a brief period of morbidity before the mortal coil is loosened. He describes a pretty straight path toward this achievement. If we modify our lifestyle, the big killers, heart disease and cancer, will be prevented. Not only will we live longer, but we will live free of the distressing symptoms of these diseases. This would be a great accomplishment, but it would fall far short of compressing the morbidity of the aged into a negligible span of time. The misery of old age is not due solely to heart disease and cancer. What about arthritis, poor teeth, deterioration of sight and hearing, depression and senility (now more fashionably known as Alzheimer's disease)? No light bulb suffers from these, but most old people suffer from at least one. Therefore, I contend that the path toward the compression of geriatric morbidity is a lot more circuitous than Fries would have us believe. Of course I am in favour of pursuing this path, but I believe that we must do it with a realistic sense of the complexity of our journey.

But first let me consider the matter of altering human lifestyles in a healthy direction. The element of lifestyle which offers the greatest hope of salutary change is smoking. Although unequivocal experimental evidence is sparse, many other kinds of evidence support the belief that smoking does harm. Even more important, there is scarcely any evidence to suggest that cessation of smoking could have unwanted consequences, other than psychological ones of, we hope, a transitory kind. This is important, because the same cannot be said of some other lifestyle changes under consideration.

Take alcohol for example. Its *excessive* consumption has a clear relationship with morbidity and mortality, but the moderate consumption of alcohol may be conducive to good health. It has been found by many investigators that current moderate drinkers have a lower risk of some important diseases than do current non-drinkers. The problem, of course, is that the non-drinkers include a proportion of ex-drinkers, some of whom may in the past have been very heavy users of alcohol. A few investigations have managed to sort this out, and their results have not eliminated the possibility that moderate drinking is beneficial (Ashley 1984). Clearly we should learn more about the effects of alcohol before we arrive at a firm recommendation.

When we look at the dietary element of lifestyle, the picture is cloudier still. Correlational analyses of dietary fat and heart disease have suggested that the optimal diet should provide a high ratio of polyunsaturated to saturated fat. But when experimental studies have been undertaken, we find that although this diet reduces mortality from heart disease it does not invariably lead to an overall reduction in mortality (Ederer et al. 1971). Since heart disease is a major component of mortality, such a result is surprising. The most plausible interpretation is that polyunsaturated fats contribute to an increase in other diseases, cancer in particular. All of this work has led to more cautious advice about the prudent diet. The currently favoured recommendation is to reduce total fat consumption rather than to tinker with the ratio of saturated to unsaturated fat.

Exercise as an aspect of lifestyle is also rife with problems. There is little doubt that people who exercise of their own volition seem to be healthier than those who do not. But of course they may have been healthier to start with. When the more rigorous method of the experiment is applied to exercise, its value as a preventive measure against heart disease is very much in doubt (Rechnitzer et al. 1983). It may be valuable from a physiological point of view, but not so valuable in actual practice. Experimental subjects have generally shown such low adherence to the exercise prescription that it is not surprising to find their fate is similar to that of the control subjects. Some of the latter have undertaken exercise on their own account, which has further thickened the plot. In telling you this, I am really saying how disappointing experiments can be when the subjects are self-willed humans and not captive rats and mice.

To sum up the issue of changing human lifestyle in order to prevent cancer and heart disease, I have to say that we are far from certain about the prospects. The evidence in favour of dietary, alcohol and exercise changes is equivocal. The evidence in favour of smoking cessation is much stronger, yet one experimental study found that the amount of change which fallible humans are capable of making was too small to be highly effective (Rose et al. 1982). The solution to this problem lies in improving motivation. Ideally the next experiment would include powerful motivational inducements so that the compliance of the experimental subjects can be increased. Ironically, the ideal experiment is likely to be eroded in another way. Anti-smoking legislation and education will reduce smoking by everyone, because there are fewer places where it is permitted or where is it socially acceptable to smoke. The effect of this will be one of contaminating the control group in any further experimental studies of the benefits of smoking cessation. This problem recalls the one I mentioned earlier in connection with experimental investigations of exercise for the prevention of heart disease. If we cannot obtain an uncontaminated control group in an experiment, we must give up the experiment. Whenever health education and health promotion leap ahead of their experimental verification, this problem will arise. Experiments must come soon rather than late in the sequence of events. Therefore we may have to be content with evidence less rigorous than experimental. The best substitute for the experimental approach is the study of a population's *changes* in disease in relation to its *changes* in lifestyle. (Time does not allow me to explain my reasons for regarding this as the nearest thing to an experiment.) There has been a most interesting study of this type which examined time trends in mortality from coronary heart disease in 20 developed countries in relation to their changes over time in diet and smoking (Byington et al. 1979). The results of this study showed that a country's decline in coronary disease was associated with its decline in cigarette smoking and consumption of dietary fat and with its increase in the consumption of grains and vegetables. Nevertheless, these associations were far from strong and altogether accounted for less than half of the change in mortality from coronary disease.

From all of the foregoing, I conclude that a lot more work is necessary before we draw firm conclusions about the extent to which changes in lifestyle will prevent heart disease and cancer. Some doubts are warranted. But after all, doubt is the basis of science. Since doubt seems such a negative attribute, let me put in its place the more positive notion of flexibility. And let me give an example. For a very long time we have held to the belief that any degree of overweight promotes disease and other chronic ailments. It was a well-founded belief on the basis of all the evidence, but most of that evidence was actuarial in nature, or in other words it came from studies of mortality among insured lives. People who choose to take out life insurance and who are permitted to do so by the insurers are not exactly typical of the population as a whole. Therefore it is not altogether surprising that population studies have shown rather different relationships between obesity and disease. Recent evidence suggests that the lowest rates of mortality are found among people somewhat above the actuarial "ideal" weight (Sorlie et al. 1980). Departures in either direction from this new optimum, thin or fat, are associated with higher mortality. So, we have reason to be flexible even in our concept of weight as a determinant of health.

I will now leave the question of lifestyle and turn to other aspects of the search for longevity and for quality of life in old age.

Let us get back to light bulbs. Assuming good quality control in the manufacture of light bulbs, we can say that they start out equal. Such is not the case with humans whose manufacture is attended by genetic and prenatal mishaps for which quality control is not easy, either scientifically or ethically. Not only are light bulbs equal at the beginning of life but they all receive essentially the same experiences during the course of their lives. Again, this is not the case with humans. Old people, unlike light bulbs, are the product of a variety of experiences, good and bad, during childhood and middle life. All of these have potential consequences for morbidity and mortality in old age. Therefore, compression of morbidity and the fulfillment of the life span is unlikely to be achieved unless we attack adverse circumstances throughout the life of a human being.

First I will give you some simple examples. Without prevention of dental decay, preferably by water fluoridation, many old people will end up with missing teeth, no teeth, or ill-fitting dentures. All three lead to nutritional problems in old age. It is not easy to chew wholesome fibre on your gums. A smooth chocolate pudding is far more palatable. Another example has to do with hearing. Not all of the hearing impairment of old age arises from senescent changes in the auditory apparatus. Some of it is the consequence of years of exposure to very high levels of noise in occupational settings or a lifetime's exposure to moderately high levels in the urban environment. I would also venture to suggest that some of the mental deterioration of old age represents the accumulated effect of monotonous work that provided little creative satisfaction at the time and little in the way of stimulating memories when the working life came to an end. Of course I cannot prove this, but the hypothesis is amenable to investigation. If it were confirmed, the implications would be important in our search for a means of compressing cognitive and emotional senescence.

Now I will deal with a broader aspect of the way in which the morbidity and mortality of old age can be shaped by earlier experiences. Let us go right back to infancy and early childhood, a time of great susceptibility especially to infectious diseases. There is a tendency to think that if a child escapes death from the infectious maladies all will be well. That is not necessarily so. Childhood infections can lead to metabolic and immunological consequences that may have long lasting effects upon health and vitality. At one time it was believed that the diseases of infancy and early childhood served as a form of quality control. The idea was that the weaker specimens of mankind succumbed to infantile diseases, leaving the hardier survivors to undertake the onward journey into adulthood. There is scattered evidence to suggest that such a mechanism may have operated in the remote days of human history. But there is stronger evidence that the very opposite has been the case in more recent times (Kermack et al. 1934; Jones 1956; Légaré 1966; Forsdahl 1977). A colleague and I have studied this question by examining adult mortality in areas of the United States according to the level of infant mortality in their birth cohort (Buck and Simpson 1982). We found that mortality from cardiovascular disease and from some types of cancer was higher among adults whose infancy had been spent in an area with high mortality from infectious disease. The association withstood statistical control of likely confounding factors. These observations led me back to the study of international trends in coronary disease. I wondered how much the addition of infant mortality to the other variables would improve the prediction of differences among countries in the trend of coronary disease. It was possible to examine this by plugging changes in infant mortality into the data on changes in lifestyle and changes in mortality from coronary disease. For 14 of the 20 countries, data on infant mortality in the early years of this century could be obtained. What I found was very interesting.[2] For both males and females, the addition of infant mortality to the lifestyle variables substantially improved the prediction of time trends of coronary disease. This is pretty tentative evidence, but it strengthens my belief that early childhood experiences have an influence upon our susceptibility to the chronic diseases of later life. Perhaps we should look upon ourselves less as light bulbs than as trees whose pattern of annular rings tells the full story of our lives.

In this discussion I have not meant to be nihilistic about the prospect of fulfilling the human life span and improving the quality of life in old age. My purpose has been to suggest that this delectable goal is unlikely to be achieved by a short-cut. The path is a long one, and I think that it starts at birth. A better life in infancy, childhood and adulthood is a requirement for a better life in old age. This applies both to personal and environmental factors. You can stop smoking at the age of 60, but you will do better if you stop earlier and better still if you never start. The adoption of a healthy diet, whatever it turns out to be, may have a greater effect the earlier in life it occurs. Similarly, improvements in our working and domestic environments will afford greater protection against the ravages of old age if they are bestowed upon us in the earlier years of our life.

Life and its span are by definition a continuity. To improve the length and quality of life we must be attentive to human needs along the whole of its course.

Floor Discussion

Question: *Madeleine Blanchet stated that the decrease in mortality has not been accompanied by an increase in severe disability. Could she elaborate on that statement?*

Answer: A study by the Conseil des affaires sociales et de la famille du Québec, based on very recent data, has shown that the disability associated with a decrease in mortality is mostly of a mild form, not requiring confinement to bed or outside help (other than self-help). The analysis covered all people over 65 years of age. Work on Canada-wide data led to the same conclusion.

Question: *Would it be useful to differentiate between the various types of preventive care?*

Answer: Many of the things we have talked about are outside the domain of medical responsibility. Exercise and a wholesome lifestyle can be pursued by people without much guidance from doctors. If we want to see healthier old people in the future, we ought to change the activities and behaviour patterns or their earlier years. The money used to achieve this goal would be regarded as an intergenerational transfer spent on health promotion.

A second strategy could be directed at disease prevention in later life. Some of the problems that Dr. Buck alluded to could be prevented by earlier diagnosis. Inadequately identified problems related to eyes, ears, and feet lead to the most common disabilities of the elderly population.

We are looking at two classes of problems, requiring two different strategies: one outside the medical arena, requiring a community-wide approach; the other, requiring a refocusing of our medical attention.

Question: *Wouldn't the prevention of chronic ailments in old age require not only good health promotion and disease prevention in earlier years but changes in the environment as well?*

Answer: Under one strategy, we would treat osteoporosis, for example, by calcium supplements and perhaps by hormone therapies as well. Under another, we would try to prevent accidents that cause hip fractures. Both strategies are targeted more directly at the elderly than, say, the control of hypertension at a younger age through some long-range nutrition strategies. But there will always be some difficulty in differentiating clearly between health promotion and disease prevention through treatment, on the one hand, and environmental changes, on the other.

Question: *How can we stimulate health promotion or primary prevention activities through changes in lifestyle?*

Answer: At times we may underestimate the modes of change that are actually taking place. In the United States, for example, there is better control of hypertension nowadays, as well as some reduction in smoking. Education and an increase in check-ups may account for the improvement in hypertension. Physicians are warning people to watch their blood pressure, their weight, and their diet. Smoking may have been reduced as a result of mass education and television. As well, preventive measures known to be very effective at younger ages, such as exercise for greater bone density, may be having a beneficial impact in later years.

Question: *Do you have any comments on the costs and benefits of preventive health care?*

Answer: The comment that "better to screen for hypertension than to heave heart attacks" was a little too glib. A detailed study has just come out in the United States – and it is relevant to this conference of aging with limited health resources – showing that screening for hypertension is certainly more expensive than the heart attacks that may result in its absence. Although that seems rather unlikely at first, screening involves a very large number of people. And it produces a large number of false positives, requires lifelong medication when properly diagnosed, and the compliance rate for taking medication over a long period of time is not very high.

The actual cost of implementing a hypertension screening program varies somewhat, depending on whether it is carried out at work, in the community, or by a physician. Obviously, there is a need to quantify the costs and benefits before implementing large-scale prevention programs, or, for that matter, before quantifying targets within a specific time-frame.

Question: *Our system of health care tends to be inflexible. The allocation of resources seems to depend more on the influence of particular interest groups than on national priorities. Would it be possible to use the health indicators as a basis for resource allocation?*

Answer: In fact, one could even begin before birth. Birth complications and resulting debilities could be prevented, in part, if physicians were not paid on a per diem basis in hospitals but on a more appropriate incentive basis.

As it stands, the United States is the only country that has developed some 300 indicators or health status that can be linked directly to health care needs.

If, for example, a hospital association in Quebec decides that premature health through highway accidents is the number one problem, then action can be taken on that front.

So we need to establish links between health indicators, restrictions in physical activities, and the traditional system of health care and, on that basis, allocate resources and restore people to health.

But we also need to realize that a good deal of preventive care is not glamorous. Preventing arthritis is not sexy: it requires health promotion strategies targeted at the middle-aged population.

All this is reminiscent of the book "Patient Beware: Dealing with Doctors and Other Dilemmas," in which Cynthia Carver begs doctors to take the time to teach their patients to look after their own health. At the same time, as indicated earlier, there is an impending surplus of doctors. If indeed that comes to pass, we should be pleased that physicians will have ample time to spend with their patients.

6 Health Care Cost Control: The Need to Articulate Measurable Objectives

Monique Jérôme-Forget

Introduction

Western societies have all entered a period of deep soul-searching and thorough reassessment of their health care systems. To most, this exercise appears to be the obvious result of spiraling cost increases. I am of the opinion, however, that other factors are at play here – factors that may have even greater long-term implications for society's long-term health care needs.

The money that we spend – or that any society for that matter spends – on health care is related to the overall wealth of that society and is determined by the sophistication and knowledge about health care exhibited by the general population. If Canadians are currently questioning the resources that this nation allocates to health care, it is because of the fact that we have today a far more sophisticated, far more knowledgeable body of citizens than ever before in our history. Health care consumers – like all other consumers – take it for granted that they have the right to assess, to question, to criticize and ultimately to choose.

The 1960s saw the consolidation of the welfare state and an upsurge in universal programs. The economic growth associated with that era usually allowed decision makers the luxury of avoiding the types of hard choices that their successors face today. New monies were generously injected into the system with little concern for their ultimate impact on the overall level of health status. In fact, the only arguments considered converged around the fact that the programs needed to be universal to prevent the stigmatization of people at the lower end of the socio-economic scale and also to enjoy wide support, especially among the middle class, which in the end probably benefited most from the universal programs.

Today, however, the language has changed somewhat. We hardly ever speak of greater accessibility; we talk of cost control. We no longer hear anyone philosophizing about delivery and equity but rather, greater effectiveness. What that means, I fear, is that we will look back on the 1980s as a period characterized by a series of "alarmist messages" of doom and gloom – resulting no doubt, from the last recession.

The one positive outcome of this decade may be the "survivor" instincts that the recession instilled in each and every one of us, turning us all into astute, prudent, and critical consumers of both private and public goods.

There is danger in the rhetoric that is used, however, because it may lead us to "throw out the baby with the bath water." Fortunately, while there is sporadic criticism of our present system, there is widespread support for our health care system. Canadians have repeatedly expressed their full endorsement of Medicare in surveys showing a 90 per cent or higher approval rating.

But while they want a universal system, nothing prevents them from seeking improvements, and so that same public is raising questions about numerous aspects of the health care delivery system – showing, at long last, a real interest in the long-term outcome of the plans designed so imaginatively back in the 1960s.

Let us not forget that it was during those years that emphasis was first placed on the need for people to take active responsibility for their health. The best cure promoted then was the prevention of illness and the need for sensible lifestyles.

A number of dogmas about the traditional medical model generally offered to the public are now being challenged. Alternative medicines – such as chiropractic, acupuncture, and bioenergetic medicine – are now gaining widespread acceptance and starting to compete with traditional medical services.

The teaching of the 1960s and 1970s, which promoted self-help, gave birth to a new generation of health-conscious citizens, fully cognizant of the consequences of smoking, poor eating habits, and a sedentary life. A new lifestyle was born, one that has become second nature to a large segment of the population and that is probably going to be the most important contributor of all towards our overall state of health by the year 2000.

Pressures on the Health Care System

The Aging Phenomenon

A number of widely known factors today seem to be threatening our health care system, and among the most prominent – and the one that is most referred to – is aging. Everyone today speculates about the effects the demographic forecasts will impose on the costs of the health care system. Depending on which hypotheses are used – all of which, incidentally, are extremely difficult to predict with any meaningful degree of accuracy – studies show that by the year 2021 the percentage of the Canadian population over 65 will vary between 16 and 20 per cent. The proportion of these defined as "the frail elderly" (those above 75 years of age) make the picture even more pessimistic.

Angus (1984) argues that because health expenditures are roughly three times as high for the old as they are for the young, future health care costs should escalate accordingly. For instance, Angus refers to an ECC study (1982), which revealed that, in 1977, 7 per cent of children aged 5 to 15 who were admitted to hospitals stayed an average of 5 days, while 28 per cent of the elderly (aged 65 to 74) stayed an average of 18 days. The 65-and-over age group, which represents 9 per cent of the population, accounted for 40 per cent of the total number of hospital patient-days. Those under 25, who made up more than 40 per cent of the population, accounted for only about 20 per cent of the total number of patient-days. The elderly frail should be cause for additional concern, because this age group is the one most afflicted with chronic diseases.

It is equally argued that the number of elderly is projected to rise from 2.4 to 6.4 million by the year 2031. As a consequence, the dependency ratio will shift accordingly. The elderly dependency ratio (the number of people 65 and over for every 1,000 supporters aged 18 to 64) will more than double between 1981 and 2031 – from 14.8 to 36.4 – while the youth dependency ratio (the 0-to-17 age group) will fall from 44.2 to 27.5, primarily as a result of projected low birth rates (Statistics Canada 1978).

The Gross-Schwenger study (1981) also postulates that the increase in the elderly ratio will more than double the demand on health care resources for that age group. No one can deny these projections if present trends continue. However, a number of postulates are taken for granted and are highly questionable, indeed.

The first of these postulates is that the birth rate will remain as low as it is now. This postulate is a logical assumption if past and present trends continue. Women have now entered the work force and have gained financial autonomy and social recognition, and a shift in the opposite direction is unlikely to materialize. However, our value system is changing somewhat. The historical "burden" (if you will allow me to use that expression) of raising children is no longer the sole responsibility of women. Raising children is simply one of many responsibilities that women undertake.

Data increasingly show that a cultural revolution has changed our vision of the family structure in more than one way. We now see increased "paternal" responsibility in a most positive and constructive way. This sociological change is even reflected in our vocabulary, which now refers more and more to parental leave as opposed to maternal leave. This new terminology is more than just symbolic, because men do request parental leave in ever – increasing numbers. Men also increasingly seek publicly to defend their paternal rights. For example, 50 per cent of men demand custody of their children following divorce. The really interesting aspect of this cultural change is that our own children may find it far more appealing to raise youngsters of their own because the responsibility for child-rearing will be fully shared by both partners.

Another argument against the view that aging will completely distort the present demographic balance can be challenged by the immigration phenomenon. Canada has a wealth of resources, which has given the citizens of this country one of the highest standards of living in the world. Yet, we seem to forget that this wealth that we are so proud of today is largely owing to the contributions made by immigrants to this land.

More recently, Canada, in a humane gesture, opened its doors to Vietnamese and Cambodian refugees. I would venture to guess that not a single one of these so-called "boat people" is unemployed today, and I was recently told that their children are often at the head of their class in school. The contribution these people have made, and will continue to make, to the wealth of this country cannot be disputed. Immigration has obvious repercussions on demography and on the age structure of our population.

I would also like to discuss other aspects of aging.

First, I would like to discuss the new lifestyles of our seniors. The bill for health care costs indicates that the greatest portion of the cost occurs at the end of our lives, usually in the last few months before death. Scitovsky (1984, pp. 591-608) did a study in which he showed that 30 per cent of all health care expenses occurred in the final 30 days of life; 46 per cent in the last 60 days; and 77 per cent during the last six months of life. Clearly, dying is a costly process.

These statistics may appear to be irrational and may give an impression of poor planning. In addition, some people may extrapolate from these statistics and conclude that the high cost of dying will be increased as a result of aging and the "extension" of the final period of life, resulting in a corresponding increase in our health care bill. Instead, I would argue that our lifestyle has changed so much that we approach aging in a totally different frame of mind.

First, the problem of institutionalization. Canada has had one of highest rates of institutionalization among its elderly population of any country in the western world. The expectations and beliefs associated with institutionalization were ingrained in our culture, and it used to be common practice for those aged 50 to secure a place in a senior citizen's home for eventual retirement at age 65. Work stopped, and we were regarded as – and certainly made to feel – no longer useful to society; our only objective was to drift slowly towards death. Yet who, today, would think of 65 as a reasonable age at which to envisage any kind of final retreat from the world?

Retirement is no longer tied to 65. The Charter of Rights is now used to ensure people's right to work as long as they feel capable of doing so. Another more important factor is linked to technology, which has forced some workers to start new careers in their mid-50s. This trend was made even more common when the recent recession made it quite appealing for certain industries to offer early retirement programs.

There is no longer a clear retirement age; rather, there is a proliferation of individuals who develop second and third careers, enriching their lives with a wealth of new experiences. This complete reversal of the traditional work profile, with its emphasis on career diversification, will have a clear impact on our retirement schedule. This new-found control over a very important stage in our lives has served to instil pride and a sense of autonomy in people who used to be regarded as dependent. There is now the urge to stay in one's own environment, in an independent fashion, for as long as possible – hopefully until one dies.

Apart from these basic cultural changes and the fact that society is looking at aging through a different prism, I would like to address the issue of lifestyle and its impact on morbidity. Fries (1980, pp. 130-36) developed a model that suggests a progressive compression of morbidity, leading to the rectangularization of the survival curve. This theory suggests that there will be a postponement of the onset of illness and chronic disease. An emphasis on health status has given birth to a health-conscious society, emphasizing the need for increased fitness, better eating habits, and, increasingly, a smoke-free environment. This health awareness has changed all of our lives, completely reversing our priorities. The submissive role vis-à-vis health care still exists among some of us, but it is no longer considered acceptable as a way of life.

A hands-on approach is the new trademark today. Education is making us more selective and more-critical consumers. Our traditional respect for the unquestioned authority of the physician has been replaced by a more critical outlook upon the health care system.

A notable example is the recent interest in women's problems, with osteoporosis following menopause. There was – and still is – a wealth of documented case histories in medical literature about the percentage of women who broke bones because of calcium deficiency, after osteoporosis. Yet medicine hardly addressed that issue; and instead, it looked upon menopause as a purely psychological phenomenon – "an emotional imbalance" – caused by the conflict associated with women's ongoing maternal urges. Today, however, women no longer feel intimidated about discussing menopause, and they have started forcing physicians to address the problem.

Today's shift in interest from the young to the not-so-young is another indication that our environment often forces us to set new priorities. Admittedly, aging is going to place additional pressures on the system. While the outcome of these pressures may generate the need for additional resources, a greater need will be to shift resources.

Technology: A Blessing and a Burden

Recent years have witnessed the advent of new technologies – some quite revolutionary – and the health care sector is no exception. Bio-engineering is clearly a promising field, making spectacular discoveries that are brought home to us on television on a regular basis. Some of these are so spectacular that they are headline news for months on end. The temptation is either to condemn these costly ventures or to back them indiscriminately. I will argue again that the truth probably lies somewhere in the middle. Technology must be used – and developed – but its use must be regulated by solid evaluation programs.

While technology is often sold on the grounds that it will contribute to a decrease in health care costs, history shows us that it has, instead, contributed to a rapid increase in costs. Yet there is no going back to a style of medical practice that would be alien to us in our highly developed world. We have opted for this sophisticated medical practice because we have also opted for technological change in our working and daily lives. Organ transplantation illustrates the spectrum of problems that may be encountered with the adoption of new health care technologies.

What Is the Cost/Benefit of New Technologies?

The arguments raised by opposing new technologies can be summarized as follows: i) the cost is too high, and the payoff from other approaches, such as preventative medicine, would greatly outweigh the benefits over the long run; and ii) technology doesn't always improve health; it merely provides intellectual stimulation to the medical profession. While we devote large sums of money to technology, we have no way of assessing its impact on health outcome.

These health technologies are the object of strong and systematic selling programs, using the most modern marketing techniques. One medical procedure will be promoted over another without clear supporting evidence of its health-outcome superiority. Accurate evaluations of clinical outcome are practically non-existent, which makes it increasingly difficult for managers to promote or oppose new techniques.

Another aspect that makes these choices extremely difficult is that medicine deals with human life – and life at any cost. While one is obviously sympathetic to that commitment to life, one can become somewhat amazed at times to witness a complete change in values in circumstances of self-interest.

If one advocates, as I do, the need to carry out – or attempt to carry out – cost/benefit analysis, one must not be short-sighted and ignore the potential benefits that may eventually be observed in promoting certain technologies. Transplants, as I mentioned earlier, were all considered too costly when they first began, and many people questioned their medical and ethical value. But the picture today has changed somewhat, and some studies indicate that the cost of some transplants is more economical than traditional treatment, let alone the quality of life that follows.

For instance, a kidney transplant is cheaper than dialysis carried out over a number of years. Furthermore, the kidney transplant provides freedom and full autonomy to the patient. It provides a new life that is far superior to that of being forced into an institution for treatment twice a week. In other words, the cost/benefit analysis must be done in the context of other factors supported by our society.

Roger W. Evans (1985) has provided us with a number of comparisons that speak for themselves. A kidney transplant in the United States costs between $25,000 and $45,000, but it must also be borne in mind that dying of AIDS can cost approximately $60,000, and the cost for a terminal cancer patient can easily exceed $50,000.

Is that reasonable? Ethical? Moral? My argument, again, is that the money allocated to new technologies depends on the wealth of a country; the richer we are, the more we will devote to new technologies. That, of course, does not prevent us from questioning certain choices. I would certainly question, for example, the fact that the richest country in the world (the United States), which spends billions of dollars on new technologies, still accepts the fact that 25 million of its citizens are not covered (or insured) by a health plan.

Fiscal Constraints – What is Real and What is Myth?

All governments have recently voiced some concern regarding the apparent distortion in the allocation of resources to various social programs. There is a widespread belief that we can no longer afford these very valuable programs because the structural deficits of some countries – and in particular of Canada – are perceived as being largely caused by our inability to control spending on these programs. A number of highly respected bodies describe our situation as catastrophic, and some go as far as to claim that the very future of our society is at risk. For instance, we spend more each year on the interest on our debt than on the overall Canadian health envelope, including both federal and provincial contributions. The debt situation is more critical for Canada than for any other country except Italy.

But is Canada's spending on health so far out of control that it will find itself unable to maintain the kind of services that we have become accustomed to? My answer to that is a clear no, and I will now explain why.

First, let us compare Canada with OECD countries. The United States spends 10.8 per cent of its GNP on health expenses; Sweden, 9.6 per cent; France, 9.3 per cent; and Holland, 8.8 per cent. Next comes Canada with 8.4 per cent, followed by Ireland with 8.2 per cent; Germany, 7.8 per cent; Australia, 7.5 per cent; Japan, 6.7 per cent; Denmark, 6.6 per cent; and the United Kingdom, 5.7 per cent (OECD 1985).

As one can observe, Canada is behaving similarly to other countries; therefore, there is nothing unusual in Canada spending as it does. Since the 1960s, the profile of health expenditures has increased dramatically from 5.5 per cent of our GNP in 1960 to 8.4 per cent in 1983.

That trend may lead one to believe that health expenditures have escalated in an unpredictable fashion. I argue that Canadians have voluntarily chosen to increase their share of wealth in the health sector because they choose health over other commodities. It may be of interest, as well, to analyze the personal expenditure profile of Canadians vis-à-vis other goods. For instance, Canadians spent 16.5 per cent of GNP on food and alcoholic beverages in 1950, while they only spent 10.5 per cent in 1984. Yet, during the same period they increased the resources they allocated to accommodation from 8.3 to 11.7 per cent (1985); to transportation, from 7.1 to 9.5 per cent (1984); to recreation and education, from 3.9 to 7.7 per cent; and, finally, to medical care, from 3.1 to 5.5 per cent, respectively.

The above indicates to me, quite clearly, that people devote a greater share of their income services when they have to spend less on more basic needs. These statistics corroborate the long-established assertion made by Solange Saudier (1983) that the monies spent on social programs, and especially health care, are no more and no less a reflection of the wealth of a country.

While the trend that we observe in Canada is similar to what is seen in other countries, there is, nevertheless, a systematic attempt to place a ceiling on health expenditures. OECD countries have tried different formulas to cap expenses and to increase the level of financial responsibility on the part of the consumer.

A number of countries have introduced user fees, global budgets, medicine lists, and a limit on the number of physicians that are in training. Some countries have a number of fully trained and qualified physicians who have no way of practising.

Why this reassessment all of a sudden? Are we becoming too poor to support our programs financially? I would argue instead that a new ideology is now part of us and that our greater awareness makes us prudent consumers.

As stated earlier, all OECD countries are making serious attempts to decrease the share of the resources they allocate to their health system. We have become increasingly aware that health spending does not necessarily equal increased health status. One would have great difficulty trying to prove that the American public enjoys better health than the Germans, the Danes, the Canadians, or the British. In other words, the 10.8 per cent that the United States devotes to health expenditures does not produce twice as much health as one sees in the United Kingdom; yet the United States spends twice as much on health as the British do.

Our great efforts in the 1960s to provide accessibility to all have not materialized. While the original objective claimed to have no barriers based on income, Canadians experience a different life expectancy depending on where they live in Canada and on their income. It is no secret that native people live, on an average, nearly 10 years less than the "average" Canadian. The reassessment that is occurring in all countries is based on the fact that we now want to focus on health status.

System Costs

The design of health care systems, be they state-funded or private, has generally removed the price barrier of consumption to the patient, and it has also minimized the cost of constraints on the providers. Because a third party is paying for the services, be it the government, a sickness fund, or an insurance-assured payment, there is no incentive for both the consumer and provider to use effectively the limited health-care resources in a cost-effective way. The system provides no incentive to the consumer to shop around and assess the services he or she is seeking; also, the system provides no incentive to the provider to maximize the services that it offers.

This open system has led to the rapid escalation in the cost of health care in spite of numerous efforts and attempts by many countries to control their expenses in this field. In Canada we developed global budgets; i.e., Quebec established a ceiling for specialists' incomes. OECD countries have developed different strategies to reach that same objective. West Germany, for instance, has sought, through a consensus of all the parties, to limit and control budget expansion by mutual agreement via the concerted action program (Abel-Smith 1985). While these efforts must be recognized as being of considerable value, little attention has been paid to the more immediate need of linking these various interventions and techniques to health status. Whether the system is publicly or privately funded, the health provider has complete control over the consumer and is generally the one who develops treatment strategies – many of which are of dubious efficacy. Maynard (1985), a well-renowned British economist who has gained recognition for his extensive knowledge of the various organizations and regulations of health care systems, makes the most impressive description of how both systems are blindfolded and rely on little more than single case studies.

The temptation today in many of these public, state-funded systems is to privatize by divesting many of its functions. This measure is claimed by some as an increase in cost – a tax on those more fortunate economically – to alleviate geographical and sociological inequalities. These policies may reduce the public expenditure and appear to solve the health-care-cost problem, but additional cost is only shifted onto the third payer – the insurance company – with little change in the health care delivery system.

An increasing number of the present system's critics advocate a reform, leading instead to a competitive market based on consumer choices. A number of these proposals have been suggested, the most prominent being Enthoven's (1980) competitive delivery system, which argues that there is conclusive evidence that the price tag for an intervention varies from state to state, from hospital to hospital, and from practitioner to practitioner. The problem, he claims, is that we do very little evaluation of the procedure we use – with little, if any, interest in the cost. Enthoven is an ardent promoter of an incentive system based on competition as opposed to regulation.

For instance, from 1960 to 1975, the number of short-term general hospital beds per 1,000 people in the United States increased from 3.6 to 4.5 per cent. This stands in sharp contrast to the 1.5 to 1.6 per cent increase in beds per 1,000 for Health Maintenance Organizations (HMOs) such as Kaiser – Permanente. Enthoven uses the law of diminishing marginal returns, known in the medical economic jargon as the "flat-of-the-curve medicine." Some hospitals in Canada joined in doing cost/benefit studies among different institutions in cases of similar diagnosis. These limited and yet innovative studies indicated that the price varied markedly from one institution to another and that the outcome did not conclude in favour of the most costly procedure. We have, in Canada, maintained our costs at a fairly low level, and within reasonable limits.

However, the question still remains to be answered as to whether we could be more cost-effective with an increased health status outcome. A number of OECD countries spend 1 to 2 per cent less of their GNP on health services, with no apparent decrease in health status.

The Solution: A Critical Path

Canada was a world pioneer when, in 1975, it published the controversial Lalonde Report, "A New Perspective on the Health of Canadians." Because of our bronze-medal syndrome – which makes us claim little victory when we should – this report received far less attention in Canada than it did in the rest of the world. It provided the impetus to a number of countries to develop long-term objectives. As early as 1976, the United States fully endorsed the Lalonde Report and progressively developed objectives, to be implemented by the year 2000. These objectives are linked to attainable, unattained goals that can be reached if the political will supports them. While Canada failed to articulate clear policies to attain some health objectives, it nevertheless articulated some programs – some, more successfully than others. Physical fitness was sold via the "participation" program; health fitness was sold via health promotion programs. While these efforts were laudable and some payoff definitely followed, a clear articulation program is still missing; Canada lags well behind the United States in these collective efforts to improve health status. Not only must we develop clear, achievable objectives for all Canadians, but we must also develop clear policies to provide a more equitable system.

The famous and controversial Black Report, published in the United Kingdom, provided conclusive evidence that health was linked to economic conditions in spite of the belief that the health care system was equally accessible to all. This evidence can apply to Canada as well. Similarly, the life expectancy of Canadians varies by more than 10 years, depending on one's wealth and status, as mentioned earlier. A developed society such as Canada should show no tolerance for such inequalities and should use all of its energies to assure – as much as is feasible – a comparable system for all its citizens.

It is clear that all of the constraints described earlier make it imperative for health care planners to articulate well-defined directions; the doom-and-gloom scenario can only impair our efforts in challenging the status quo. Instead, these pressures must lead us to reassess our present system critically and target our resources towards new objectives.

While aging may not be as problematic as is often claimed, it nevertheless requires that new strategies be developed. The market system is clearly putting pressure on the providers to offer services needed by the consumers. Yet it is still difficult to find enough geriatricians to answer clients' needs. While a market increased in interest has mushroomed, in both the service area and the research field in gerontology, we still lack the political will to stress the needs of the elderly. The struggle to maintain health must also be addressed. Increased fitness must be promoted and sold to the public with more energy than at present, and epidemiological studies must be strongly supported with research funds to document cause-and-effect relationships. We have blindly increased the resources to health care services without properly documenting the cost/benefits. For years we claimed that cost/benefit studies could not be done with any scientific accuracy, and therefore we avoided the dilemma of choosing. Today these pressures will impose more discipline upon our planning process.

The same exercise must be applied to the technological revolution. Some critics claim that technology is largely responsible for the recent increase in health care costs. There is clear evidence that technology has contributed to the marked inflation in the overall cost of health care. There is, however, an urgent need to look into the cost/benefits of many of these techniques in addition to their cost effectiveness. Short-term and long-term evaluations must be part of any program to document trends and impacts.

The biggest danger facing Canadians today is that of our self-sufficiency and lethargy to look ahead and improve upon our spectacular achievements, even if those achievements are regarded as a model for many other countries. I would like to make, at this point, certain recommendations that appear to me to be of utmost importance:

1. Develop clear, operational, measurable objectives to improve the health status by the year 2000.

2. Develop a good information system that can provide indicators for researchers on the one hand, health workers on the other, in order, to improve their performance.

3. Develop cost-effective and cost/benefit analysis to substantiate recommendations for change.

4. Modify the incentives in the present system that are now limiting yet promoting the consumption of services into another system that will emphasize prevention and cost-effective techniques. The HMO model has many of the right characteristics.

7 Advances in Medical Technology

H. David Banta

The aging of the population in industrialized countries is by now a well-known phenomenon. What is perhaps not so clear is the associated patterns of disease. Obviously, aged people have more health problems. Generally, these are chronic diseases, what might be called degenerative diseases. As the body ages, its anatomy and physiology begins to break down. The result is such conditions as coronary artery disease, cancer, arthritis, liver cirrhosis, end stage kidney failure, and senility. The successes of the past lead to the problems of the future. As one disease is prevented or effectively treated, those who would have died live to an older age. More chronic disease is the result. For the foreseeable future, this seems the inevitable pattern. People will live longer, but will develop lingering chronic problems that will present many challenges to the health care system.[1]

The aging of the population itself drives up the cost of health care, since the diseases that result from the aging process require care (U.S. Office of Technology Assessment 1984*a*). However, the inputs have also changed greatly during the last 40 years, and will probably change even more in the future. By inputs I mean, especially, technology. In this paper, I will consider technology to be organized knowledge applied to specific tasks (Galbraith 1977). Health care technology includes drugs, medical devices, and surgical and medical procedures, and the organizational and supportive systems in which these are delivered (U.S. Office of Technology Assessment 1978). However, the organizational and supportive systems require a quite different treatment, and might also be considered to be an important part of the solution to technological problems. Therefore, in this paper, I will confine myself to what might be called "clinical health care technology."

The major premise of this paper is that sooner or later the public will reject further increases in health care costs. Naturally, more health care must be traded against something, something must be foregone. As health care has consumed ever-growing amounts of the gross national product of industrialized countries, a number of them have begun to work actively, apparently with public support, to limit further increases. For example, there seems to be a strong societal consensus in the Netherlands that 10 per cent of the GNP is enough. With this consensus, some policy changes aimed at holding down costs have been implemented.

A Historical Perspective

It has often been said that the average patient visiting the average physician began to have a more than average chance of benefiting from the visit about 1900. It is difficult to realize that the effective technology of health care has largely developed during the lifetimes of some octagenarians. Prior to 1900, the sanitary revolution had begun, there were a few effective drugs, and surgery had developed quite a lot. Diagnosis was the main task of medicine, and diagnostic tools such as the X-ray and the stethoscope developed during the 1800s. Otherwise, medicine had little to offer (Banta et al. 1981).

Nonetheless, pressures developed during the 1800s to make health care services broadly available. These were due in part to the development of such fields as surgery. Industrialization, with better education and relative prosperity, along with pressure from organized workers, led to expanded financial coverage for health care services. Social insurance was inaugurated in Germany in 1881, and other European countries soon followed with similar models. The new knowledge of the causes of disease, with the discovery of microbes and the sanitary revolution, which led to a lessening of the fear of the hospital, combined to encourage the institutionalization of health care, especially in hospitals. The financial coverage made possible great expansions in the numbers of physicians and hospitals. The hospital became the home for newly developing technology.

Since 1950, there has been an explosion of biomedical knowledge. This explosive development is related to the development of public institutions for funding health related research and the tremendous growth in funding that occurred during the period following the Second World War. In particular, the discovery of the structure of DNA has begun a revolution in diagnosis and treatment. At the same time, machines and electronics have moved into medicine, first automating and improving human functions, and later doing things that literally could not be done before. The area of diagnosis has perhaps developed the most rapidly, with the development of the automated clinical laboratory. Now hundreds of tests can be run on any bodily fluid or tissue. Such imaging devices as the computed tomography (CT) scanner have invaded departments of radiology and transformed them into departments of imaging that more and more deal with digitalized data instead of films of internal bodily structures. Intensive care has improved so that older, sicker, and frailer patients can survive quite radical surgery. As machines develop that can take over the function of a failing body part, bodies can be kept alive almost indefinitely. Entirely new disciplines and specialties have developed.

Few of these technologies have had a dramatic effect on health status. Instead, large investments in biomedical research, high public expectations, and generous reimbursement schemes have helped to foster a kind of technology that has been called "halfway technology" (Thomas 1974). Such technologies are attempts to compensate for the incapacitating effects of certain diseases whose course one is unable to do much about. It is a technology designed to make up for disease or postpone death. Thomas cites transplantation of hearts, kidneys, livers and other organs, and the equally spectacular artificial organs. These technologies are for diseases for which no definitive technology is available: coronary artery disease, stroke, most forms of cancer, cirrhosis of the liver, end-stage renal disease, emphysema, arthritis, asthma, senility, depression, and so forth. The problem, then, is not that medicine has nothing to offer these diseases. The problem is that technologies are available that can increase comfort or mobility, relieve pain, reduce anxiety, and so forth. Such technologies are often very expensive.

The situation at the moment is that a large part of medical practice is made up of old procedures that were developed empirically and were never tested scientifically. Gradually, many of these old procedures are being shown not to work or are being displaced by new technology. The new technology is being tested for effectiveness and safety in a better and better fashion. So the present struggle is between old and new technology: old and young practitioners.

Unfortunately, much good is being lost. The new technology is not always well-evaluated, and since little is known of the value of the old, the two may continue to exist side-by-side. In some cases, machine technologies of dubious benefit have come into widespread use. The faith in curative medicine has tended to downgrade the importance of the caring function. Diagnostic skills are being lost because of the dependence on machines. The rational functions of diagnostic machines (what might be called "left-brain functioning") have become so important that intuition and other non-rational processes are losing their place. And the ability to extend life has tended to obscure the fact that we all must die.

It seems clear that societies have not planned well for the incorporation of new technology. The great successes of the vaccines and the antibiotics, in a culture that was already optimistic about the benefits of technology, have fostered a faith in technology that has made it difficult to question its value. Yet during the past 40 years, many technologies have come into widespread use and have then been shown to have no or limited benefit. Unsafe technologies have harmed millions. Technologies have caused new social problems, such as life extension or abortion, that we have not been prepared to deal with (Banta et al. 1981).

The STG Future Health Technology Project

The Dutch government grappled with questions concerning the future of health care during the early 1980s. Its broad answer was that the future of health care must be anticipated. It set up an independent structure, the Steering Committee on Future Health Scenarios, to supervise studies concerning the future. Scenarios were developed in a variety of areas, such as aging, life style, cancer, and cardiovascular disease. In 1984, the Steering Committee decided to start a new activity on health care technology. In April 1985, I became the director of this activity.

The project is a two-phase effort. The first aspect is the identification of future technologies and the examination of possible ongoing methods of monitoring the development of those technologies. This might be called an "early warning system." The second phase is to collect and analyze information on the potential implications of identified technologies in advance of their diffusion into practice. This will be done for a set of high-priority technologies. Thus, the project is designed to provide something of a look into the future of health technology, but also to present information that can be used to frame actions that might hasten, alter, or avoid aspects of that future.

The first phase of the study was to survey experts. A somewhat informal survey was carried out of United States experts in late 1984. The survey consisted of a letter inviting ideas about coming applications of health technology that could be of significance – in terms of clinical outcomes, institutional effects, economic effects, or ethical implications, or otherwise. About 100 usable responses were received. These responses were summarized in a compilation that listed technologies, and in some cases gave information about them. Surveys were then sent to European experts, most of whom were also sent the compilation for their reaction. The compilation was expanded using that information. The information on specific technologies in this paper comes largely from that compilation.

Some Case Examples

Transplants — With advances in immunosuppressive drugs and in knowledge of the immune system functioning, transplants should increase considerably. Survival of transplants currently being done, such as liver and kidney, will increase significantly. Organs that may become possible to transplant successfully include brain tissue, pancreas (or partial transplant), bone, small bowel, and endocrine organs. Although these will be expensive, they are limited in extent of use by the availability of human organs.

Artificial organs — This is a much more serious issue economically, since there is no natural limit on the availability of organs to transplant. Already, machines and devices compensate for functioning in several areas, including kidney (dialysis), joints, and teeth. These are likely to be greatly improved through biomaterials. Other possibilities for the future include heart (presently experimental), pancreas, liver, blood vessels, blood function substitutes, and bladder. It can readily be seen that the demand for such organs could be very large with an aging population.

For example, in the United States it was estimated that 33,600 of the 800,000 people that die yearly of cardiac disease would be candidates for a workable totally implantable artificial heart. The estimated costs for manufacturing and surgically implanting such a heart are from $24,000 to $75,000 per patient initially, with continuing costs of $1,800 to $8,800 per year. Thus, this one technology would cost U.S. society $1 to $3 billion per year (Lubeck and Bunker 1982).

Another dramatic example is the so-called artificial pancreas, an implanted insulin pump with a control unit that monitors a diabetic's blood sugar and adds insulin to the patient's blood stream as the blood sugar rises. This technology is not yet available, but probably will be soon. The advantage is that some anatomic complications of diabetes can apparently be prevented or partially reversed by maintaining blood sugar at close to normal values. Overall, the prevalence of diabetes in the population is 2 to 4 per cent, so that there are perhaps 5 million diabetics in the United States. The costs of this technology are unknown, but $5,000 per year is probably conservative. This technology, then, could cost U.S. society more than $8 billion if it were used in one-third of all diabetics.

Prosthetics — Almost the same could be said for prosthetic devices, which are also replacing a part of the body. Prosthetics will become far more sophisticated, advances being combined from materials science, controls of foreign body reactions, computer control and miniaturization, knowledge of nerve and muscle control, and knowledge of the dynamics of human movement. Implantable sensory aids, for vision, hearing, and smell will surely become possible. Other communication disorders will be treatable by such devices. Prosthetic devices will probably become available for bladder control. Prosthetic fingers, for example for those with severe arthritis, will probably become available.

Monoclonal antibodies — Monoclonal antibodies are an example of an advance derived from the new biotechnology. They are homogeneous antibodies derived from a single clone of cells. They are highly specific identifiers of antigens, and have diagnostic, therapeutic, and investigatory uses. They are already coming into widespread use, but will become even more widespread in the future. Diagnostic methods will generally be improved by such use of monoclonal antibodies, but the cost will also rise. With increasing rates of disease, more diagnostic testing will be done.

Diagnostic imaging — Diagnostic imaging is another case of exciting technology that will be expensive, but whose positive benefits may be difficult to demonstrate. The most famous of such devices, the computed tomography (CT) scanner has already made a revolution in departments of radiology, which are changing their names to departments of medical imaging. Now nuclear magnetic resonance imaging (MRI) is spreading rapidly, and most experts say that it complements, but will not replace CT scanning. Other imaging methods that are already in use but will probably spread further include positron emission tomography (PET) scanning and ultrasound scanning. In 1981, the Office of Technology Assessment (1981*b*) estimated that CT scanning, nuclear medicine scanning, ultrasound scanning cost about $2.5 billion in the United States. That figure is now much higher, and will rise even higher.

Conclusions from These Cases

The capabilities for diagnosis and treatment of disease will increase greatly in the next few years. However, few of these advances will have a dramatic effect on health status. They are mostly aimed at diagnosing and compensating for chronic diseases. Many of the resulting technologies will have to be used continually by the affected person as long as he or she lives, which is often very expensive.

Overall, the compilation listing future technologies that we have developed, and these cases, make it clear that technological advance will continue, and probably even increase in rapidity, during the next decades. Few of these technologies will be definitive, however. Most will increase marginal effectiveness of dealing with a certain medical condition, and many will be very expensive. So what is to be done?

A Solution to the Technology Problem

Various solutions have been proposed to this problem. One is that prevention should be encouraged. However, while this probably is a good strategy in itself, prevention will only increase overall costs, because it will ultimately lead to a larger population of elderly people. Another solution is that the health care system should be made more efficient. This also undoubtedly should be done, and is worth doing, but it does not address the basic problem. Once the efficiency gains have been realized, costs will continue to go up at a rapid rate. One strategy that has been inadequately examined is teaching people when it is appropriate to use services, given that many physician visits are for self-limited conditions, such as upper respiratory infections.

One partial solution to this problem is to assess technology as a guide to its use (Banta et al. 1981). In narrow terms, this means assuring that a technology is effective and safe. In broader terms, it means assuring that the society can afford the technology, or that the benefits are worth the costs. In the broadest framework, it means assuring that the social costs of the technology are not too high, or that they can be dealt with.

Another partial solution to this problem is to develop a health policy framework that makes it possible to control or channel technological development (Banta et al. 1981). Such a framework exists, at least in some form, in all countries (Banta and Kemp 1982). So the challenge is to identify the framework and strengthen those elements that can be effective.

Developing an Effective Health Policy Framework

Government policies toward technology can be divided into four basic areas: 1) research and development (R&D); 2) evaluation and assessment; 3) regulation of efficacy and safety; and 4) investment in and use of medical technology (including payment for services). Evaluation and assessment will be discussed in the following section.

Research and development — Since the Second World War, governments in the industrialized world have become deeply involved in supporting R&D of all kinds. This support is based on the realization that private sources do not support basic research effectively. On the other hand, applied research and technology development are not supported very effectively by public funds. Generally, such activities are funded by industry, which can capture the profits from its efforts.

In recent years, social research, including health-related research, has become a greater priority. Numerous countries have declared health R&D to be one of their top priorities (Banta and Kemp 1982). Such research tends to be more applied, and health services research is a growing field as well, based on the fact that the public pays for most medical services through governments, so that government has a responsibility to try to assure efficient systems of care.

In the United States, the National Institutes of Health is the dominant supporter for basic health research. In most European countries, an independent medical research council allocates research monies, which insulates the decisions from politics.

Most observers of this field feel that the possibilities of controlling technology through influencing research are limited. Basic research is by its nature an uncertain enterprise, aimed at knowledge development. If the knowledge is available, applied research or technology development can be undertaken. Trying to influence the course of basic research can be dangerous for the future of biomedical knowledge.

On the other hand, applied research and technology development is mostly in industry, and is treated as an industrial secret. Governments' abilities to control this sector are very limited.

Regulation of drugs and devices for efficacy and safety — All industrialized countries have programs for regulating efficacy and safety of pharmaceuticals. These regulatory mechanisms have developed because of the realization that the development of drugs in capitalist countries is primarily a responsibility of private enterprise. Because industry is oriented primarily to profits, historically it has not been very concerned with safety. A number of incidents, such as that with thalidomide in the late 1950s and early 1960s, which led to large numbers of babies being born with deformed limbs, have convinced governments that drugs must be carefully regulated.

These mechanisms work in similar ways in different countries (Banta and Kemp 1982). When the manufacturer has a product that has shown promise in animals, it applies to the regulatory agency to test it in humans. The human tests are then carried out, and if the drug is found to be efficacious and safe in well-controlled clinical trials, the company applies to the government for a license to market the drug. Some countries, such as France and Belgium, have provisions that require that a new drug be more efficacious than one already on the market before it can be marketed.

Once the drug is on the market, these agencies have relatively little to do with it. There are some programs for monitoring safety, particularly for long-term adverse effects. But such agencies concern themselves very little with how the drug is actually used in practice. To some extent, the payment system deals with this problem.

Medical devices and equipment can be regulated in a similar manner, but only a few countries have formal programs for this purpose. Two of them are the United States and Canada. The United States requires premarketing approval of devices for efficacy and safety, but does not require such rigorous proof as is required in the drug area. Canada has a program of post-marketing surveillance of devices, including the power to require withdrawal of a device from the market. While few countries now regulate medical devices directly, interest is growing in this area.

These programs too have little potential to help rationalize use of health care technology. They were designed for a different purpose, which they generally carry out well. Regulation of drugs and devices is a very powerful tool, and must be used carefully, both to allow worthwhile technologies on the market early and to prevent the marketing of unsafe or dubious products. The programs act basically before marketing is allowed. It would be difficult to combine other functions with this one. Thus, these programs are an important part of the health policy framework, and in many cases could be strengthened, but they do not address the central problem identified in this paper.

Controls on investment and use — The population of industrialized countries generally has extensive coverage for health care services. This means that the individual is usually paying little or nothing at the point of receiving the service. The individual, then, has an incentive to demand extra or additional services.

Because of this problem, collective constraints on the adoption and use of health care technology have developed. Generally, this is a recent development, and the effect of these policies is often unknown. Direct constraints are either prohibitions against the adoption and use of a technology, or detailed specifications of the circumstances under which it can be adopted. Indirect constraints are usually financial. They include decisions about the level of fees or budget permitted. Such decisions include whether or not to pay for use of a technology, as well as how much. Fees can also be coupled with conditions, such as guidelines.

Governments have tended to favour direct controls such as regulating the placement of certain large expensive machines or services. Such regulatory programs often are linked to formal planning activities. More and more, budget constraints are being looked to as the most important control. It has been widely recognized that fee-for-service payment to physicians and day-rate payment to hospitals encourages the use of services and drives up costs. There is a general movement to prospective budgeting, as with global hospital budgets in Canada, or the DRG system in the United States. There are also moves to change the system of payment to physicians, although these are not so far advanced as yet.

Nonetheless, budgets have so far been relatively little used to channel technology. For example, new technology is generally paid for at a very high rate, but there have been few attempts to evaluate such costs before the level of payments is set. Fees can be set to encourage certain services and discourage others, but generally fees follow traditional patterns of prestige in the medical profession (e.g. surgeons collect high fees, "high" technology services are reimbursed at a higher rate than general care). And, as already noted, fees can be linked to specific guidelines. The possibilities will be explored further in the next section.

Technology Assessment

Technology assessment is addressed to the broad effects of a health care technology, including its benefits and risks, its financial costs, and its broad social effects (Banta et al. 1981). Technology assessment is not a discipline, but its practitioners are linked by an interest in affecting policy decisions. One could say that if an evaluation is done for the purposes of affecting health policy, it is a technology assessment. If it is done because it is interesting research, it is not a technology assessment.

Technology assessment as it has developed has a number of practical problems. The field is a new one, and few assessments of a broad scope have been done. Many assessments that have been done have been of poor quality. However, perhaps the greatest problem is that assessments have been done late in the life cycle of a technology. That means that the important decisions have already been made on other grounds: personal experience, or financial gain, or desperation. To be successful, assessment must be done early enough to affect decision making.

Up until fairly recently, the only evaluation that was done fairly consistently was for efficacy and safety. Such studies were done as part of the medical profession's commitment to increase the quality of its services (and by industry to gain a license for marketing). This activity is very worthwhile, and has probably expanded in recent years.

However, such evaluations are not addressed to the problem discussed in this paper: increasing needs with limited resources. Because of this problem, formal techniques linking efficacy with financial costs have been advocated with increasing frequency (U.S. Office of Technology Assessment 1980; Culyer and Horisberger [eds.], 1982; Warner and Luce 1982). The main two techniques in question are cost/benefit analysis and cost-effectiveness analysis. Cost/benefit analysis is controversial in the health field because all costs and benefits must be put in financial terms (dollars). This means, for example, putting a monetary value on human life. Aside from the broad implications of making such an attempt, the techniques used, such as contribution to the economy, give less value to the lives of elderly people and women than to young and middle-aged men.

The most used formal technique in health is cost-effectiveness analysis, which indicates the benefit derived from the cost incurred. The result might be stated as number of years of life achieved by a certain investment, or increases in life expectancy achieved. This leaves it up to the policy maker to determine if the benefit is worth the cost. Increasingly, the benefit is stated in some overall measure bringing together mortality, morbidity, and quality of life. The most popular is "quality-adjusted life years" (QALYs). In this method, the answer would be the number of QALYs achieved by a certain investment.

One major advantage of such studies is that they embody no assumptions about the value of different alternatives. For example, those involved in preventive medicine give a high value to what they do; surgeons do the same. The technique is neutral on such an issue. In a given instance, a preventive intervention may be cost-effective. In another, a surgical procedure may be cost-effective.

One way of using such studies would be to set a cut-off point for a technology. Williams (1985) has suggested that a reasonable cut-off point might be gross national product per capita. The figure for Britain is 4,000 pounds. Williams calculated the following cost-effectiveness ratios:

	Cost per QUALY gained
	(British pounds)
Cardiac pacemaker	670
Hip joint replacement	750
Valve replacement (aortic)	950
Coronary artery bypass surgery (with left main artery disease)	1,040
Kidney transplant	3,000
Heart transplant	5,110
Coronary artery bypass surgery (for angina pectoris)	11,400
Hospital dialysis	14,000

Under Williams' proposal, then, heart transplant and hospital dialysis would not be done at all in Britain, and coronary artery bypass surgery would only be done for certain indications.

This follows an earlier idea described by Bush (1980), who compared cost-effectiveness of different technologies, summarizing literature that used discounted well-years (DWYs) or discounted life-years (DLYs) as the outcome measure:

	Cost per discounted well-year
	(U.S. dollars)
Tuberculin testing (for tuberculosis)	6,000
Phenylketonuria screening	2,900
Thyroxin case finding	3,600
Screening for severe hypertension	4,850
Screening for mild hypertension	9,880
Renal dialysis	50,000

Bush points out that these studies were done at different times using different assumptions, so the exact numbers are not comparable. In gross terms they are probably more-or-less accurate, however. The important point is to illustrate the point, not to dwell on specific numbers.

There certainly are many objections that could be raised about this proposal, including the lack of reliable data and the relative lack of experience with the techniques in question. In its 1980 report on cost-effectiveness analysis, the Office of Technology Assessment concluded, for these reasons and others, that cost-effectiveness analysis should not be the sole basis for a decision. In other words, such factors as judgment and political considerations also have a place in decisions. However, up to now such techniques of rational analysis have played almost no part. There seem to be only two alternatives: to continue to make decisions on emotional, intuitive, or political grounds, or to begin to include more rational analysis as a part of the decision-making process. One interesting aspect of Williams' specific illustration is that it gives different levels of cost-effectiveness for a procedure depending on the medical indications. A cost-effectiveness analysis could be the basis for guidelines on technology. Using a technology in the most cost-effective circumstances seems more acceptable than withholding it from the entire population.

Attempts to Use Technology Assessment in Policy Making

Up to now, technology assessment has largely been an exercise without direct links to health policy. The major exception is in drug regulation, where clinical trials are required and the results are synthesized by the regulatory agency as a guide to its decision making.

The major interest in technology assessment focuses on guiding adoption and use of technology. One interesting experience is that of the U.S. Medicare program, which must make explicit coverage decisions for new medical technology. The Health Care Financing Administration (HCFA) which administers the program, has limited scientific and medical expertise, so turns to the Public Health Services, which includes the National Institutes of Health, for advice. Since 1978, this function has been sited in the Office of Health Care Technology Assessment (OHTA). OHTA collects literature and opinions from experts and writes a short opinion based primarily on the efficacy, safety, and medical acceptance of the technology in question. The major limitation of this program in terms of this paper is that only a limited number of technologies are considered, and that economic and broader social issues play essentially no part in the opinions.

The Office of Technology Assessment (OTA) of the U.S. Congress has ten years experience in health technology assessment, and it has done a number of reports on specific technologies. However, this work on specific technologies is not generally done to affect specific policy decisions, since the Congress does not intervene at that level. Increasingly, OTA's work has focused on such policy issues as the implications of the DRG system for medical technology.

However, OTA has carried out two interesting cost-effectiveness analyses. The first concerned vaccination against pneumococcal pneumonia (U.S. Office of Technology Assessment 1978; Willems et al. 1980). The analysis concluded that vaccination could add a year of healthy life among all age groups for about $4,800 in net medical care costs. The cost-effectiveness ratios varied according to the age of the person vaccinated, from $1,000 per year of healthy life for an adult 65 years old or older to $77,000 per year of healthy life for a child between the ages of two and four. At the time of the publication of these results, the Medicare program (covering elderly and disabled people) did not cover any preventive intervention. This analysis led Congress to amend the Medicare law to cover pneumococcal vaccine. An update of this analysis in 1984 concluded that the cost of a year of healthy life for an adult 65 years of age or older would be between $300 and $6,200, depending on such factors as the percentage of the Medicare population receiving the vaccine.

In 1981, in part because of concerns that other effective preventive technologies were not being covered by the Medicare program, OTA carried out a cost-effectiveness analysis of influenza vaccination (1981*a*). In this case, OTA examined the experience with the vaccine for the seven year period from 1971-72 to 1977-78. The conclusion was that a healthy life was gained for the cost of $63 per year. Probably only the childhood vaccines have more favorable cost-effective ratios than that. However, Congress did not respond to this study, and influenza vaccine continues to be used at a very low rate (about 10 per cent of the population).

In Europe, several countries have experience in the area of technology assessment. The Swedish Planning and Rationalization Institute (SPRI) in Stockholm studies specific technologies and disseminates the information as an aid to decision making. The decisions are generally those of hospital administrators, not national policy makers. For example, SPRI did a study of computed tomography (CT) scanning based on the CT scanner's ability to replace other expensive procedures (Jonsson and Jonsson 1982). The hospital director could consult the study and determine if he could expect to support a CT scanner out of his fixed budget. These studies seem to have an increasing impact in Sweden.

In Holland, the Sick Funds Council has begun to fund cost-effectiveness analyses of specific technologies to help it in its decision making. Until recently, the Council had only supported studies of transplants of various organs, but it has now decided to support a cost-effectiveness and ethical study of in-vitro fertilization.

Another interesting experience is that the British National Health Service contracted with Martin Buxton, an economist at Brunel University, to carry out a cost-effectiveness study of heart transplant (1985). The National Health Service has used the results of the study to determine national policy.

Thus, the experience with technology assessment as an aid to policy making is growing. It is this merging of both areas that is interesting and important.

Summary and Conclusions

As the population continues to age, the burden of chronic illness and disability will grow. Since great expansions in the resources going to health care seem unlikely, increasingly we will be faced with difficult decisions. The present health care system is specialist and hospital intensive, so some changes in priorities also seem probable.

Many new technologies will be introduced during the next years. A large number of these will be addressed to problems of aging, including technologies that correct for disability and make it possible for people to be more independent.

One possible problem for the future is lack of resources for home care and for technologies that could enhance independent living for elderly people because of pressures to maintain the hospital system.

The choices that must be made will always be difficult, but they can be made easier by an understanding of their implications. In this sense, assessing technology is an essential part of dealing with technology for the aged population.

Roger W. Evans

In 1983, I published two papers on the subject of resource allocation and rationing in health (R. W. Evans 1983). I argued, as have others, that there are several reasons resource allocation and rationing decisions will become inevitable (Fuchs 1974; Calabresi and Bobbitt 1978; Klein 1984; Aaron and Schwartz 1984; Schwartz and Aaron 1984, 1985). These were as follows: 1) the changing age distribution of the population of the United States; 2) the increasing prevalence of chronic illness; 3) more widespread disability among people in the population, in part due to age and chronic illness; 4) the development and use of expensive high technology approaches to the treatment of patients; and 5) the clear trend in the direction of ever-increasing health care costs. An astute observer would promptly suggest that what I envisioned for the future is currently commonplace, and has been so for many years (Fuchs 1985). Medical triage is hardly a new phenomenon. Needless to say, I do *not* take exception to this argument, but the point that must be made is that the frequency and extent of such decisions will, in all likelihood, increase in the future. We must begin now to prepare ourselves, and those around us, for some very difficult times.

People have come to expect a great deal from medicine. They are *not*, as many critics would like us to believe, asking for *less* health care (Blendon and Altman 1984). The average person does not think in terms of fixed health care budgets, as do those persons responsible for public health policy. When their health is at stake, most people want *nearly* everything conceivable to be done to help them. Rarely does the quality/quantity of life tradeoff, often referred to by those of us who are healthy, fit the immediate circumstances of severely ill patients and their families (McNeil et al. 1981). Certainly such matters should be vigorously debated, but rare is the occasion when this can be done in a meaningful and policy-relevant manner.

Ultimately those of us who extoll the virtues of medicine must accept the responsibility, and share the blame, for cultivating the public's high regard and nearly boundless expectations of medicine. We speak of high health care costs and dubious benefits but in a manner that is not accessible to even an intelligent layperson. We do not, it seems, appreciate the crushing defeat that accompanies our frequent medical-technical adventures. We do not, nor will we ever, have the kind of crystal ball that permits the more simple-minded amongst us to make heroic decisions on the basis of scanty information. We must, therefore, struggle with our own inadequacies, errors, and uncertainties, but doing so in a publicly responsible manner. People can, I think, get along with less, but only if they understand the rules of the game, before they begin the chess match that starts at the end of their lives. We cannot, as it were, throw our hands up in defeat based upon the complexity of the issues involved. We must go forward with a tempered spirit seeking solutions, but not recoiling against technology just because it seems to have placed us in a most unenviable position.

Implications of New Technology for Long-Term Care

Health care technology contributes greatly to the problems commonly associated with long-term care (Banta et al. 1981; Institute of Medicine 1985*a*; Jennett 1984). Above I noted that the need for resource allocation and rationing decisions can be traced to at least five factors, only one of which was technology. However, upon close examination it is clear that all of these factors are strongly correlated. For the most part, technology prolongs life, which increases the probability that individuals will become chronically ill and disabled (see Tables 7-1, 7-2, and 7-3). Chronic illness and disability are prime contributors to rising health care costs. If life prolonging and life sustaining technology were removed from this "causal" chain, health care costs would decline considerably, but so would longevity, one of our primary indicators of the success of medicine.

Table 7-1

Self-Assessment of Activity Limitation According to Age in the Civilian Non-Institutionalized Population of the United States, 1981

	Population by extent of limitation		
	Limited but not in major activity	Limited in amount or kind of major activity	Unable to carry on major activity
		(Per cent)	
Age category:			
Under 17 years	1.8	1.8	0.2
Under 6 years	–	1.8	0.4
6-16	2.7	1.8	0.1
17-44	3.0	4.2	1.2
45-64	4.8	12.4	6.8
65 and over	6.6	21.7	17.5

SOURCE National Center for Health Statistics, *Health, United States*. DHHS Pub. No. (PHS) 85-1232 (Washington, D.C.: U.S. Government Printing Office, 1984).

Table 7-2

Persons with Limitation of Activity Due to Chronic Conditions, 1981

	Population by extent of limitation		
	With activity limitation	With limitation in major activity	With no activity limitation
		(Per cent)	
Age category:			
Under 17 years	3.8	2.0	96.2
17-44	8.4	5.4	91.6
45-64	23.9	19.1	76.1
65 and over	45.7	39.2	54.3

SOURCE B. Bloom, "Current estimates from the National Health Interview Survey, United States, 1981," *Vital and Health Statistics*. Series 10, No. 141, DHHS Pub. No. (PHS) 83-1569 (Washington, D.C.: U.S. Government Printing Office, 1982).

Saving lives has been the penultimate goal of medicine, physicians are, after all, trained to save lives, not to take them. Death is the defeat of medicine, and rejecting long-term care as an unacceptable use of scarce health care resources calls into question the foundation upon which medicine rests. A paradox is evident, and one that is difficult to resolve. This paradox is perhaps best conveyed by Fernando Torres-Gil, staff director of the House Aging Committee, when he noted that "The aging

Table 7-3

Functional Status of Nursing Home Residents According to Age, 1977

	Under 65 years	65-74	75-84	85 and over
		(Per cent)		
Functional status:				
Dressing				
Independent	44.8	38.8	27.5	24.2
Requires assistance, includes those who do not dress	55.2	61.2	72.5	75.8
Using toilet room				
Independent	61.8	53.1	45.7	41.0
Requires assistance	28.1	37.8	44.7	48.0
Does not use toilet room	10.1	9.1	9.6	11.0
Mobility				
Walks independently	53.6	43.2	33.2	22.5
Walks with assistance	15.7	21.4	30.5	35.6
Chairfast	25.5	30.5	31.5	35.9
Bedfast	5.2	5.0	4.9	6.1
Eating				
Independent	73.8	72.9	66.2	63.5
Requires assistance, includes those who are tube or intravaneously fed	26.2	27.1	33.8	36.5

SOURCE National Center for Health Statistics, *Health, United States* (1984).

of people in our society is a real success story. The good news is they are better educated, better off financially, having a good time. The bad news is they are living longer." (*Washington Post*, March 10, 1986.) And, because they live longer, chronicity and disability eventually consume their life savings and pension benefits.

All technology is not, nor should be conveyed as life-saving and, therefore, a problem. Many elderly and disabled people benefit from a variety of technologies which enhance their quality of life. Life enhancing technologies may minimize the incapacity elderly people experience, and grant the independence that the majority of the aged apparently desire. For example, in a recent *Washington Post* survey of persons age 65 and over, a large majority of those polled do not live with their children and, of these, an overwhelming 95 per cent do not want to.

Clearly technology and long-term care issues are to some extent inseparable. However, when analyzing the purported negative consequences of technology, I urge that we distinguish technologies according to the following categories: 1) those that sustain life; 2) those that prolong life; and 3) those that enhance life. In short, some technologies are not as "bad" as others.

Technology in Perspective

I grew up in a small village outside of Port Huron, Michigan – Smith's Creek. As some of you may know, Port Huron is a "border" town in the sense that it borders Sarnia, Ontario. Smith's Creek has few claims to fame but perhaps the most significant to me is that, as a young man, Thomas Edison was kicked off a train in the village after an experiment he was conducting and the caboose blew up. Thomas Edison is a boyhood hero of mine, as is Henry Ford. In times of quiet contemplation I ask myself what these two gentlemen would have said had they been forced to answer the same kinds of questions we now ask of the developers of modern medical technology. Would we have the automobile or electricity if we had correctly anticipated all the untoward consequences we have come to live with? In 1982 alone there were 46,300 deaths in vehicle-related crashes in the United States (Doege 1986). Should we outlaw automobiles as a serious threat to our health?

My concern is easily stated. A distinct anti-technology mood is becoming apparent in medicine. Unfortunately, the more vocal critics often seem to lack a sufficient knowledge of the issues to offer reasoned observations. They probably fear the technology because they know so little about it. For example, how many people who criticize the "artificial heart" really understand the various types of devices that are frequently referred to as "artificial hearts?" Do they understand the difference between a left-ventricular assist device, an intra-aortic balloon pump, and a total artificial heart? It is simply appalling that people with no technical savvy whatsoever can be propped up before a television camera and be described as "experts" on this or that technology and, in so doing, undermine years worth of work by well-meaning scientists. By the same token, however, I feel the scientists whose work is being criticized should be sufficiently impartial to ask themselves, and others around them, the very hard questions about the direction of their own work. In short, scientists must be publicly responsible, and it is the lack of such responsibility that I feel has now gotten us into a difficult position with respect to the development and diffusion of new health care technologies. While extolling the virtues of the latest technology, we must also express our reservations. While this may seem impossible, it is not unreasonable. The public needs more guidance than has thus far been provided.

In the end, it is difficult to ignore technology as a primary source of problems in the delivery of health care services (Altman and Blendon [eds.], 1979; Moloney and Rogers 1979). We hear a great deal about the latest developments and how these are likely to transform the treatment of a given problem, if not medicine as a whole. The search for miracle cures is endless. Nonetheless, to suggest that technology creates more problems than it solves is hardly reason to accept status quo technology because of our unparalleled concerns about cost. Our concerns about cost should not lead us to ignore and criticize new technological innovations creating technological stagnation, but rather we must carefully consider how much and which types of technology can be supported within the current delivery system.

Costs and Health Care Policy

It is with great interest today that I watch the preoccupation with health care costs. About 10.5 per cent of the Gross National Product (GNP) in the United States was devoted to health care in 1985, down from 10.6 per cent in 1984 (Francis 1986). Inherently I find it unappealing to argue that an increasing percentage of the GNP devoted to health care is negative. Do we not spend massive resources on other more dubious projects and activities? Today, however, it is clear that health care policy makers think in terms of fixed, unalterable budgets. Thus, drawing an arbitrary line as to what percentage of the GNP should be devoted to health care is one reflection of the concept of fixed budgets, but intense lobbying could significantly affect the funds allocated to health programs in comparison with other programs.

Despite my optimism, which may do little more than temporarily stave off the inevitable, I think there is a need to carefully evaluate the extent to which the delivery of health care services is cost-efficient (Angell 1985). For example, neither fraud nor abuse should be tolerated, and providers should be frugal within reasonable expectations of quality. Thus, we should make every effort to identify what we are doing right. Ineffective care must be eliminated, and excessively costly care must be carefully scrutinized.

Table 7-4 summarizes actual and projected health care expenditures for the United States from 1982 through 1986 (Francis 1986). As shown, there has been a nearly 10.0 per cent increase in total expenditures from year-to-year. Outlays for hospital care in 1986 will amount to about $186.1 billion, $14.5 billion (8.4 per cent) more than in 1985. Despite the government freeze on physician's fees for Medicare patients, total expenditures for physician's services are forecast at $92.5 billion in 1986, a 10.8 per cent increase. Nursing home expenditures are seen rising 11.6 per cent to an estimated $39.3 billion.

In the United States, health care insurance is usually included as an employee benefit, although there are many different public health insurance programs (U.S. Department of Health and Human Services 1985*b*; Kasper et al. 1980; Mundinger 1985; United Hospital Fund of New York 1985; Bazzoli 1985; Wilensky and Berk 1985). Table 7-5 shows the number of persons covered under various plans and programs. As shown, nearly 70.0 per cent of the population has private health insurance coverage, while about 17.2 million people, or 7.4 per cent of the population lack any insurance coverage whatsoever.

While there is a tendency to ignore the economic impact of private health insurance benefits on employers, the cost of health care as reflected by insurance payments is extremely interesting. The Chrysler Corporation, for example, recently estimated that about $600.00 of the

Table 7-4

Recent and Projected Health Care Expenditures in the United States, 1982-86

	1982	1983	1984	1985	1986
			($ Billions)		
Total expenditures	321.2	355.1	387.4	423.8	466.0
Health services and supplies	307.0	339.8	371.6	406.6	448.1
Personal health care	284.9	315.2	341.8	376.0	413.2
Hospital care	134.7	148.8	157.9	171.6	186.1
Physician's services	61.8	68.4	75.4	83.5	92.5
Dentist's services	19.5	21.8	25.1	28.3	32.0
Other professional services	7.1	8.0	8.8	9.8	11.0
Drugs and medical sundries	21.8	23.6	25.6	28.5	31.2
Eyeglasses and appliances	5.6	6.5	7.4	8.3	9.3
Nursing home care	26.9	29.4	32.0	35.2	39.3
Other health services	7.6	8.6	9.4	10.8	11.8
Program administration and net cost of insurance	12.8	14.5	19.1	19.1	22.8
Goverment public health activities	9.3	10.1	10.7	11.5	12.1
Research and construction of medical facilities	14.2	15.3	15.8	17.2	18.1
Research	5.9	6.2	6.8	7.3	7.8
Construction	8.3	9.1	9.0	9.9	10.3

SOURCE S. Francis, "U.S. industrial outlook 1986: Health and medical services." *Medical Benefits* (1986).

cost of each new car goes to employee health care benefits. In an ongoing Chamber of Commerce survey of employer-provided benefits, it was found that insurance payments (not just health insurance) as a per cent of gross payroll increased from 1.4 per cent in 1951, to 7.4 per cent in 1984 (U.S. Chamber of Commerce 1985, 1986). These payments increased from an average of $47 per employee in 1951, to $1,581 per employee in 1984. But even these figures do not reflect adequately expenditures made by employers for health care. A complete summary of health-related expenditures on behalf of employers is provided in Table 7-6.

To deal with the problem of growing health care expenditures, a number of solutions have been offered. Many of them have been targeted toward the more appropriate use of medical technology. Angell (1985), for example, has argued quite persuasively that the elimination of various types of unnecessary medical care would greatly reduce total health care expenditures. She identifies three categories of unnecessary medical care, including the following: 1) laboratory tests, X-ray films, and other "little-ticket" items are are "performed without medically valid indications"; 2) expensive operations and procedures often referred to as "big-ticket" items that are "used in circumstances in which they have no known value"; and 3) useless medical care that "consists of the aggressive treatment of terminally-ill patients for whom treatment other than palliative care is no longer appropriate."

Suggestions such as the foregoing are laudable and doubtlessly would accrue substantial savings to the health care system, however, they do little to inform us as to what is the appropriate use of technology. For example, none of them addresses the problem of ineffective medical care. Perhaps even greater savings would accrue by eliminating those technologies which have no therapeutic benefit, or are so cost-ineffective that we are unable to justify their use. This is essentially where health care technology assessment plays such a critical role, but resources committed to such activities are grossly

Table 7-5

Insurance Coverage by Source Including Number and Percentage Distribution of Beneficiaries

	Number of beneficiaries, members, or policy holders	Total
	(Millions)	(Per cent)
Payers:		
Private insurers	159.9	69.2
Medicaid	19.9	8.6
Medicare	30.0	13.0
CHAMPUS[1]	2.1	0.9
Active military duty	2.1	0.9
Uninsured	17.2	7.4
Total U.S. population	213.2	100.0

[1] Civilian Health and Medical Program of the Uniformed Services.

SOURCE U.S. Department of Health and Human Services,Task Force on Organ Transplantation, "Report to the Secretary and the Congress on Immunosuppressive Therapies." Rockville, Maryland (1985).

Table 7-6

Breakdown of Health-Related Expenditures on Behalf of Employers, 1984

	Estimated annual expenditure
Health care portion of insurance	$1,392*
Social security	262
Workmen's compensation	262
Long-term disability	47
Short-term disability	65
Dental insurance	85
Paid sick leave	273
Total	$2,385

*Based on 88 per cent of total insurance costs as the health care portion.

SOURCE U.S. Chamber of Commerce, *Employee Benefits, 1984*, Washington, D.C. (1985), and "Employee benefits stay steady as payroll percent in 1984, but composition changes." *Medical Benefits* (1986).

inadequate and are likely to remain as such well into the foreseeable future. The Institute of Medicine (1985*a*), for example, has recently estimated that public and private spending on technology assessment totals over $1.0 billion per year. This may seem like a lot, but these resources are distributed over a wide range of diverse activities including controlled and uncontrolled clinical trials, epidemiologic and other observational studies, health services research, and various synthesis activities. The vast majority of funding for medical technology assessment is devoted to drug assessments. The Institute of Medicine concluded that at least another $300 million should be committed each year to technology assessment.

Ultimately, there are few options available to health care policy makers to reduce health care expenditures. It is doubtful whether the suggestions offered by Angell, as one example, would be reasonable long-term solutions. Nonetheless, by taking what may appear to be rather drastic steps in making decisions about who shall be treated, we will be better prepared for a more traumatic tomorrow wherein decisions to forego or withhold treatment will become more commonplace and, thus, more acceptable. I truly believe that the real problem is the inherent necessity to differentially value lives, even though most of us feel uncomfortable with decisions as to who should be treated based on social and economic considerations.

Value of Life Considerations

Along with repeated pleas for more systematic technology assessments as a method to reduce health care costs, we also hear of the value of cost-effectiveness analysis. In point of fact, a *comprehensive* health care technology assessment would include a cost-effectiveness analysis.

Recently Doubilet and co-workers (1986) have described a variety of uses of the term cost-effective. These uses are as follows: 1) cost-effective = cost-saving; 2) cost-effective = effective; 3) cost-effective = cost-saving with an equal (or better) health outcome; and 4) cost-effective = having an additional benefit worth the additional cost. They recommend that the term cost-effective be restricted in use to criterion 4.

Since health care decisions are increasingly being made on what are described as cost-effectiveness analyses, which may fit any of the several definitions offered above, it is important that we state explicitly that this is an approach to valuing human life. What we as a society are willing to spend to save a life reflects the value of that individual's life to society.

From a health policy perspective, we are rapidly moving in the direction where we will state, with few reservations, what we can afford to spend to save a life per year over an expected period of survival. In evaluating technologies, we will endeavour to determine how well a "questionable" technology compares in terms of costs and effectiveness with other "accepted" technologies.[2] For example, renal dialysis costs approximately $25,000 per year of life gained, whereas a heart transplant costs on the order of $23,500 per year of life gained. If we are willing to make a commitment to the treatment of the patient with end-stage renal disease at the cost indicated, we are hardly justified in *not* treating the patient with end-stage cardiac disease in need of a heart transplant.

To make appropriate decisions about which technologies we will pay for requires that we have available the best information on cost-effectiveness. This will enable us to decide whether questionable technologies compare well with an external standard. Also, depending upon resource constraints, it is quite possible that our external standard will be adjusted periodically. In other words, we may be willing to pay more or less to save a life in the future compared with what we are currently paying.

While we prefer to ignore the issue of valuing lives, we have based past behaviour on this principle. For example, in times of war and disaster, women and children are given priority over men. On occasion, older people may receive less vigorous medical treatment than younger people. Recently I have noticed small warning signs affixed to automobile windows which say "Baby on board." I assume that we are being told that if we must crash, we should choose another motorist who does not have a baby on board. Do we assume another person's life is worth less? Also, I often find that when a young person dies people tend to express greater grief than when the decedent is an older person.

Quality of Life Concerns

Quality of life is a concept that has gained considerable attention in medicine. Most of us have come to recognize that offering a patient extended survival without reasonable quality is unacceptable.

Elsewhere we have argued that quality of life has both an objective and a subjective dimension (R. W. Evans, Manninen, Garrison et al. 1985; R. W. Evans, Manninen, Maier et al. 1985). Objective indicators include functional ability, ability to work, and health status. Subjective indicators include well-being, psychological affect, and life satisfaction. In both the National Kidney Dialysis and Kidney Transplantation Study and the National Health Transplantation Study we studied quality of life intensively (R. W. Evans et al. 1984). In doing so, we found that, on objective quality of measures, neither dialysis nor transplant patients compared well with the general population – they did less well. However, as shown in Table 7-7, on the subjective measures they compared very well with the general population. We, therefore, concluded that people who have undergone lifesaving therapy (e.g., transplantation) or those that continue to do so (e.g., dialysis patients) make remarkable adaptation to their life circumstances (R. W. Evans, Manninen, Garrison et al. 1985). We suspect that these findings apply equally well to the aged population which has long-term care needs. In fact, the available evidence suggests that well-being improves with age, even after statistical adjustments have been made for income (Campbell et al. 1976). In short, aged people, like dialysis and transplant patients, adjust to their life circumstances.

Although not a quality of life measure per se, I thought it would be of some value to look at perceived health status among dialysis and transplant patients in comparison with people of various ages, including the elderly. Previous research has shown a strong correlation between perceived health status and objective indicators of health status (Ries 1983; Garrity et al. 1978). For example, the results of the 1978 National Health Interview Survey indicated that persons assessed to be in excellent health spent 3.3 days in bed per person per year due to illness or injury and made 2.5 doctor visits per person per year, while the corresponding estimates for persons assessed to be in poor health were 64.2 bed days and 15.3 doctor visits per person per year (Garrity et al. 1978; Wilder 1983).

The results shown in Table 7-8 are somewhat inconsistent with those presented in Table 7-7. It could be argued, as I have already noted, that perceived health status is not a quality of life measure per se and, therefore, there is little reason to believe that people's expectations of their health are readjusted in the same manner as their quality of life as reflected by other, perhaps more appropriate, quality of life measures. Clearly, dialysis patients and the recipients of heart transplants have a lower perceived health status than aged people in any category, while kidney transplant recipients are quite similar to aged persons. Comparisons with the general population lead to some interesting observations. Older people do not compare well with younger people, nor do dialysis or transplant patients compare well with younger people.

I have taken this analysis one step further by examining the relationship of another quality of life measure to age, health status, and various subjective

Table 7-7

Summary of Subjective Quality of Life Scores for Heart Transplant, Kidney Transplant, and Kidney Dialysis Patients

		Quality of life indicator		
		Well-being	Psychological affect	Life satisfaction
Patient group:				
Heart transplant	$\bar{X}$	11.11	5.49	5.11
	S.D.	(2.53)	(1.32)	(1.28)
Kidney transplant	$\bar{X}$	11.83	5.62	5.66
	S.D.	(2.61)	(1.16)	(1.49)
Home hemodialysis	$\bar{X}$	11.12	5.42	5.19
	S.D.	(2.67)	(1.20)	(1.56)
In-center hemodialysis	$\bar{X}$	10.77	5.15	5.11
	S.D.	(2.73)	(1.31)	(1.69)
Continuous peritoneal dialysis	$\bar{X}$	11.05	5.24	5.30
	S.D.	(2.84)	(1.26)	(1.68)
General population	$\bar{X}$	11.77	5.68	5.45
	S.D.	(2.21)	(1.12)	(1.25)

NOTE $\bar{X}$ = mean; S.D. = standard deviation.
SOURCE R. W. Evans; D. L. Manninen; L. P. Garrison, Jr.; et al.,"The quality of life of end-stage renal disease patients," *New England Journal of Medicine* (1985).

measures of quality of life. The indicator I have chosen is the number of days per year that dialysis and transplant patients are willing to give up in return for good health. The results of this analysis are summarized in Table 7-9. As shown, patients who score less than or equal to the mean Sickness Impact Profile score are willing to give up 18.6 days per year compared with 41.6 days for those patients who are sickest. The same relationship holds for comorbidity, age (although less dramatic), and physical disability as measured by the Karnofsky Index. Among the more striking differences are those that are found on the subjective quality of life measures – life satisfaction and well-being.

The results presented here suggest that some care must be taken in evaluating the quality of life of patients who have received or continue to receive lifesaving therapy. On the more subjective quality of life indicators such patients compare well with the general population but, on objective measures, this is not the case. Similarly, evaluating the quality of life of aged persons must proceed with caution, as people's expectations may be adjusted to fit their life circumstances. In the final analysis, I would like to argue that using quality of life as a criterion upon which to base the selection of patients for treatment is fraught with problems. Unfortunately, we have discussed quality of life in relationship to such decisions as if it were both easily and unequivocably ascertainable. Nothing could be further from the truth.

The Development of Consistent Health Care Policy

Once we accept the principle of differentially valuing life and appropriately interpreting its quality, I think we are very close to the development of consistent health care policies. More than anything else, I think that people seek consistency, not only in behaviour, but in policy as well. If people know the "rules of the game," as it were, I think they can live with tragic decisions, even when the life of a loved one is at stake. They may feel the world is unfair in that a person near to them must die, but they at least know where the policy lines will be drawn.[3]

I think frequently of the father of a young child in need of a liver transplant. For months he pestered organ procurement personnel in his part of the country about

Table 7-8

Perceived Health Status of Kidney Transplant, Heart Transplant, and Kidney Dialysis Patients Compared with the Aged and the General Population of the United States

	Perceived health status			
	Excellent	Good	Fair	Poor
Group:	(Per cent)			
Kidney transplant[1]	29.4	43.4	22.4	4.9
Home hemodialysis[1]	7.7	46.8	33.8	11.6
In-center hemodialysis[1]	9.0	31.9	45.8	13.3
Continuous peritoneal dialysis[1]	4.9	39.5	35.8	19.8
Heart transplant[2]	14.6	50.7	27.5	7.2
Aged (by group)[3]				
65-69	28.5	41.2	21.6	8.1
70-74	28.4	41.2	21.2	8.2
75-79	25.9	41.9	23.0	8.4
80-84	26.7	41.0	22.0	9.8
85-89	32.5	37.9	18.3	11.5
90-94	35.4	39.2	16.4	6.8
95 and over	29.0	38.7	18.3	14.0
General population[3]				
15-19	56.7	37.2	5.0	0.6
20-24	52.9	39.6	6.4	0.8
25-29	53.5	38.5	6.7	1.0
30-34	53.3	37.9	6.8	1.7
35-39	50.8	38.3	8.4	2.0
40-44	47.1	40.1	9.8	2.7
45-49	42.1	41.6	12.2	3.7
50-54	38.2	41.5	14.4	5.5
55-59	32.9	42.5	16.8	7.4
60-64	30.7	41.3	19.6	7.8
All persons	48.6	38.5	9.5	2.8

[1] K. King; D. Reese; and S. Zachary, "Medicaid coverage and payment policies for organ transplants," The Intergovernmental Health Policy Project, Washington, D.C.(1985).

[2] R. W. Evans; D. L. Manninen; T. D. Overcast; et al.,*The National Heart Transplantation Study: Final Report* (Seattle: Battelle Human Affairs Research, 1984).

[3] P. W. Ries, "Americans assess their health: United States, 1978," *Vital and Health Statistics*. Series 10, No. 142, DHHS Pub. No. (PHS) 83-1570 (Washington, D.C.: U.S. Government Printing Office, 1983).

his daughter's need for a liver. He participated in Congressional hearings on transplantation. One day in a brief encounter, I think I learned the basis of his frustration. After all he had done, and all the public exposure he received, he never was able to figure out the rules of the game. One day, amidst his frustration, he stated that if he "only knew the rules" he could live with the consequences. In short, the poor man was never sure that he was doing everything he could to help his daughter. In his mind, there was always something more to be done and, I am sure upon his daughter's death, this uncertainty caused him great guilt as well as grief. I, therefore, insist that we strive to make decisions about payment for technologies and the treatment of patients in a thoughtful and consistent manner.

For the past several years my colleagues and I have conducted several studies on organ transplantation. In the course of doing so, I have developed some relatively straightforward views on lifesaving therapy. Transplantation, of course, is but one example of such therapies. I

Table 7-9

Number of Days Dialysis and Transplant Patients Are Willing to Give Up per Year in Return for Good Health According to Age, Health Status, and Various Subjective Quality of Life Indicators

	Number of days per year patients are willing to give up in return for good health
Indicator:	
Total sickness impact profile score	
Less than or equal to average (positive)	18.6
Greater than average (negative)	41.6
Comorbid conditions	
One condition	26.7
Greater than one condition	35.2
Karnofsky index	
No or minor limitation	27.0
Significant limitation	37.2
Life satisfaction	
Less than or equal to average (negative)	35.0
Greater than average (positive)	18.6
Well-being	
Less than or equal to average (negative)	40.6
Greater than average (positive)	16.6

will now briefly summarize my argument which favors payment for heart transplants.

Despite evidence to the contrary, Medicare still considers heart transplantation an unproven, experimental procedure. Initially, this response was reasonable. However, the accumulated evidence now suggests otherwise, and to their credit, private insurers have altered their policies. Over 80 per cent of the Blue Cross and Blue Shield plans and the commercial insurers now include heart transplantation as a standard benefit (U.S. Department of Health and Human Services 1985*b*). This contrasts sharply with the policies of public insurers. The official Medicare position is that heart transplantation is experimental, and only 24 state Medicaid programs and the District of Columbia reimburse providers for heart transplants (King et al. 1985). This inconsistency in coverage exists and is difficult to explain in terms other than economic. Policy makers remain concerned that coverage of heart transplantation will lead to another costly end-stage renal disease-type program, even though the evidence conflicts with this view.

In the final analysis I have concluded that it has been politically expedient to exclude heart transplants as a Medicare-covered benefit. The mood of the current Administration, including Congress, is to reduce Medicare expenditures. By treating heart transplantation as an exotic and experimental form of lifesaving therapy, policy makers have avoided confronting the difficult issues and decisions head on. Our health care policy will not be consistent until they do address these issues.

The issue that underlies the debate over the cost-effectiveness of heart transplantation and the appropriateness of coverage is really evidence of our concern over how much we can afford to spend to care for the dying patient. The patient in need of a heart transplant is dying of end-stage cardiac disease. The acquired immunodeficiency syndrome (AIDS) patient is also dying, but of an immunologic disorder, and is in need of expensive medical management. The prognosis for the AIDS patient is far less favourable than that of the heart transplant recipient. The same is true of the patient requiring total parenteral nutrition and in-center hemodialysis. Which of these patients should be treated? What are their lives worth? As I have already noted, we have always been uneasy attaching a dollar value to life but, when challenged, the critics of heart transplantation contend that the procedure is too costly. In effect they are saying that human life is not worth $110,000, not that the treatment is ineffective. These same critics ignore the fact that we routinely spend greater amounts of money on the care of other patients with conditions that have a poorer prognosis, and fewer net benefits, than heart transplantation. Over $2.0 billion is currently spent per year to care for about 80,000 patients with end-stage renal disease. Over $1.4 billion has been spent for the medical care of the first 10,000 AIDS patients (Hardy et al. 1986). The total economic impact of heart transplantation is between $44.9 and $116.9 million in Year 1, with Medicare shouldering between $2.4 and $5.8 million.[4]

Table 7-10 provides just a few diverse examples of procedures and treatments that are routinely covered by both public and private insurers, few questions asked. While not all of these procedures are directly comparable in terms of cost per year of life saved, and benefits derived therefrom, they do force us to ask the obvious: Why is heart transplantation any different? What is the basis for discriminating against the patient with end-stage cardiac disease?

Table 7-10

Examples of the Cost of "Accepted" Therapies

Total parenteral nutrition	$110,000 per year per case
Maintenance hemodialysis	$25,000 per year per case
Treatment of hemophilia	$10,000 per year per case
Treatment of cancer	$30,000 per year per case
Major adolescent psychiatric disorder	$185,000 per case
Treatment of AIDS	$40,000 – $140,000 per case
Bone marrow transplant	$100,000 per case
Sixty per cent burn patient treatment	$100,000 per case
Coronary artery bypass graft	$25,000 per case
Treatment of variceal bleeding	$18,400 per case

SOURCE R. W. Evans, "The heart transplant dilemma." *Issues in Science and Technology* (in press).

Instead of simply asking how much a new technology costs, we should be groping for an answer to this question within the context of how much can we afford to spend on the care of the dying patient, regardless of the approach to treatment (R. W. Evans 1985). Public insurers would be well-advised to address the resource allocation and rationing issue head-on but, again, within the context of what we can afford to spend on the care of the dying patient, and the value of human life. It is noteworthy that 4.9 per cent of Medicare beneficiaries who died in 1978 accounted for 27.9 per cent of Medicare expenditures and that 30 per cent of all expenses of decedents occurred in the last 30 days of life, 46 per cent in the last 60 days, and 77 per cent in the last six months of life (Lubitz and Prihoda 1984; Scitovsky 1984). Clearly, dying is a costly process.

Finally, in evaluating the costs of new technologies I would argue strongly that cost comparisons *not* be limited only to other readily identifiable technologies, but be expanded to include all costly *approaches* to the management of dying patients. Global patient management strategies, such as those applied to cancer patients, must not be ignored in favour of discrete technologies. Too often we argue against new technologies on the basis of the costs of other specific technologies. Our basis for comparison must be broadened. If we cannot afford heart transplantation, then it is only fair that we reconsider other "accepted" therapies that have lesser or equal benefits. In the future the status quo should not go unchallenged as we attempt to promulgate consistent health care policies.

Conclusion

To be sure, both the United States and Canada face some very difficult health care policy issues. In the United States, both indigent care and long-term care are policy issues that have attracted considerable attention, but few realistic and politically palatable solutions have been offered to deal with them (U.S. Department of Health and Human Services 1981; Somers 1982, 1985; Davis and Rowland 1986; Blumenthal et al. 1986). Canada similarly faces problems with respect to long-term care (Kane and Kane 1985*b*). Both countries appear perplexed as politicians suggest that "society must decide." In health care, however, it is unclear how society can decide. How does one build public opinion into the development of public health policy? (Crawshaw et al. 1985). The federal governments of both countries seem more responsive to lobbyists who represent the interests of particular constituencies.

Within the United States there are several "grassroots" movements afoot to use the informed public as a source of information concerning health care priorities. Initiatives of this sort have been started in the states of Oregon, Maine, New Jersey, Wisconsin, Washington, California, and Idaho. The state of Oregon took the lead in these activities when it convened the Governor's Conference on Health Care for the Medically Poor (Crawshaw et al. 1985). A task force was later convened to develop "public awareness and consensus on bioethical issues." In 1982 a second conference was held, from which two major questions emerged: 1) How does society value expensive curative medical care relative to preventive services being progressively curtailed in government budgets? 2) Can the present implicit rationing of health care be made explicit and congruent with community values? Clearly, as these questions suggest, grassroots initiatives such as Oregon Health Decisions have lofty goals.

We must, it would seem, attempt to achieve a balance, or at least a mix, in the types of health care services delivered to the public. It cannot, nor should it, be argued that certain segments of the population, such as the elderly have an obligation to die and get out of the way. This position, of course, has been advocated by the Governor of Colorado – Richard Lamm – as a way to reduce the disproportionate economic burden imposed by some people within our society (Friedman 1985). Governor Lamm has recently extended this same argument to persons with catastrophic illness. Unfortunately, conceptions such as these are grossly naïve and do little to facilitate the development of reasoned health care policy. They simply engender animosity and hostility which tends to polarize people on the issues. I truly believe that our emphasis should be on a proportionate *mix* of health services for the most broadly based *constituency*, given prevailing *economic constraints*. We have yet to take the necessary steps to do any of the foregoing. The economic constraints remain ambiguous, the various constituencies unclear, with the exception of those that are most vocal, and the mix of services has hardly been appreciated.

As we attempt to work through these exceedingly complex issues, we must recognize that there are, and will be some very significant problems that arise as a result. In this instance, problems will give birth to new problems, some of which may be more complicated than those we started with. There are several areas that are most noteworthy. By topic they are as follows: 1) cost-effectiveness; 2) intergenerational conflict; 3) social costs; and 4) the Hippocratic oath.

As previously discussed, the cost-effectiveness is the most reasonable criterion upon which to base resource allocation and rationing decisions. In practice, however, this criterion inherently discriminates against elderly people as well as those who are disabled. Thus, this criterion brings into sharp conflict two goals – equity and fairness, and the need to provide those health care services which benefit the largest number of people at the least expense. It is possible that on some occasions cost-effectiveness considerations *may* need to be suspended in pursuit of fairness and equity. In doing so, however, the value of the criterion may be seriously jeopardized.

Intergenerational conflict arises when younger people have a greater advantage than older people when competing for resources available for health care and social services. Occasionally, younger people, such as children with congenital defects, may also be at great disadvantage, being unable to represent their interests. Despite our best efforts, it is quite possible that an elderly person's life will be deemed less valuable than that of a younger person. Occasionally there may be reasonable medical grounds upon which such a decision can be based – as in the case of heart transplant recipients – but not always (Merriken and Overcast 1985; Overcast et al. 1985).[5] To what extent can we disproportionately allocate resources to the health care of the elderly and still meet other obligations? The answer to this question will certainly draw the battle lines for future intergenerational conflicts.

It is often argued that caring for the catastrophically ill yields the net benefit of returning a sick person to productive status. While this argument has some basis, this is not always the case. Many persons surviving or coping with catastrophic illness are not "productive" in the usual sense of the term. They are often unable to work, sometimes by choice, and, more frequently, because they are unable to return to their usual line of work. Considering this, and the heavy emphasis on fixed health care budgets, it is increasingly clear that human life is not worth much. In fact, our treatment of the catastrophically ill often yields people who are medically and socially dependent. Disabled persons currently represent 11 per cent of Medicare enrollees (U.S. Office of Technology Assessment 1984*a*).

Finally, our literal interpretation of the Hippocratic oath must be re-evaluated. The role of the physician not only entails returning the sick to good health, but helping the severely ill cope, and assisting the terminally ill in death. Of these three separate roles, most physicians are only trained in the first – healing. They need both direction and training in how to help some patients cope and others to die.

In conclusion, the future will be *unlike* the past. Economic constraints will dictate a practice of medicine that is quite unlike that to which we have become accustomed. Our expectations of medicine must be tempered with this new reality as we seek to better inform the public as to what it can expect, and we must concurrently seek its input as to which treatment decisions are most appropriate. A new partnership must be formed between the medical profession, health care policy makers, and the public.

Raisa B. Deber

I have been asked to respond to the following question: Could guidelines be established for acquiring and funding of new technology?

What is the Problem?

Technology in medicine, like Banquo's ghost, is the unwanted visitor at the dinner table. Most other sectors of society welcome technology as a way to reduce costs and increase productivity, even though the image of Three Mile Island has now partially eclipsed "Better things for better living through chemistry." However, clinical health care technology is expensive, as David Banta has noted, and discussions about technology in medicine usually revolve around how its use can best be controlled. The task is not easy. I suspect it is not accidental that the technology-assessment newsletter co-founded by Dr. Banta was titled "The Sorcerer's Apprentice," although I doubt that he intended to imply that the role of the technology assessor is played by Mickey Mouse.

Clearly, the cost-effectiveness of much of the technology that has been applied to medicine has been dubious; the artificial heart has daunting costs per year of life gained. Certain technologies may even have done more harm than good. For example, iatrogenic effects of unnecessary X-rays may in some cases out weigh benefits from improvements in diagnostic accuracy. Technology assessment has been seen by many as the solution to controlling unwarranted diffusion and preventing chains offering "CT-Scanning While U Wait" from springing up in every shopping mall. Unfortunately, there are problems in deciding how best to conduct such assessments (particularly when the target insists upon moving). Advocates of technology assessment are attempting to resolve these methodological issues. They are also looking at ways to increase the likelihood that the results of technology assessments will be used to guide health policy in more "rational" directions than do our current methods, which sometimes seem to respond to the disease represented by the most appealing poster child or the procedure advocated by the most politically astute group of physicians and hospital administrators (Banta [ed.], 1982).

At first glance, the Canadian health care system provides an appealing "policy laboratory" for technology assessment. Health care in Canada is, constitutionally, a responsibility of the provincial governments. The federal government is involved as a provider of money, and hence – like any good sugar daddy – as a specifier of the terms to be met for the cash to keep flowing. The Canada Health Act specifies that the provincial plans must satisfy five criteria: public administration, comprehensiveness, universality, portability, and accessibility; all "insured health services" (as defined by regulation) must be provided to all residents. Within the provisions of the Act, the provincial governments are thus given considerable leeway (albeit often less than they would like) in the management of the system. As you are aware, the Canadian system of national health insurance covers all medically necessary hospital and physician services. Almost all costs for insured services are paid by the government plans, and hospitals receive almost all of their operating budgets from the province, so the management control of the system is largely concentrated in the hands of the province. The existence of a single party payer thus gives government far greater leverage over health policy than has been the case in the United States. In addition, there are few ideological barriers to governmental control over health care delivery; Canadians have traditionally accepted government involvement. Hence, in theory, centralized policy guidance should be relatively simple and, given political will, the provincial governments should be able to use their firm grasp on the (largely economic) policy levers to be able to control health care costs (Deber and Vayda 1985).

What is Being Done?

In Ontario, for example, the Ministry of Health is theoretically in a good position to control demands for new technology. Hospitals are responsible for raising a portion of necessary capital expenses, but the Ministry contributes the balance – one source of direct control over new programs. Operating costs are met almost entirely from government funds; government can therefore starve unapproved expansions of services by refusing additional operating costs. (One unapproved CT scanner drained its hospital's budget for years and provided an ongoing object lesson to other institutions.) Additionally, the Ministry has required that all requests for "new or expanded programs" over $25,000, however financed, must receive explicit Ministry approval. In recent years, such requests have been forced to clear an intermediate hurdle and be priorized by regional advisory bodies known as Direct Health Councils; a high priority has not guaranteed funding, but a low one has usually guaranteed rejection.

Given sufficient political will, the Ontario government clearly has the ability to block any plans for new technology that are not seen as fitting into regional (or provincial) priorities. How successfully has this ability been used? The record, not unexpectedly, has been mixed. As one example, the Ontario government has prohibited CT scanners in private offices and has refused to pay the operating costs of any hospital scanners that have not been "approved." The policy has succeeded in giving Ontario a smaller ratio of CT scanners to population than that prevailing south of the border. However, several successive CT scanner policies have had to be abandoned (always with upward revisions in the number to be acquired), and pressures for the acquisition of more scanners persist (Wodinsky et al. 1985). Nuclear magnetic resonance imaging is the current "hot technology," and so the tale continues. Demands for ever newer technology persist, and government policy has remained a reactive one, viewed by some as "damage limitation." Certainly, technology acquisition has not been guided by formal assessment, and I see no evidence that major change is in the offing. Indeed, my current research on technology acquisition in Ontario hospitals has to date revealed that *no* central agency – whether the Ontario Hospital Association or the Ontario Ministry of Health – has had sufficient knowledge even about which services are offered to permit systematic planning on a provincial level. In late 1985, the Ontario Ministry of Health finally embarked on a project to ascertain the services available in the province's hospitals, so this obvious oversight may soon be remedied. As of now, with great good will and boundless enthusiasm, hospitals have been "doing their own thing," and few outside their institutions even know what their thing is. Adjacent hospitals still request similar facilities; with sufficient political skill, they even acquire them. Two of Ontario's three MRI machines reside in hospitals in London, Ontario. Without intending discredit to London or its superb physicians, one doubts that this situation would exist were health planning "rational."

What Constraints Exist?

Why have governments had so much difficulty? Why is health care technology feared when government policy urges expansion of technological development in other sectors of the economy? Why does technology in health care seem inevitably to increase costs when technology elsewhere can lead to the sort of astonishing economies we have seen in the microchip industry?

In general, institutional demands for technology arise from physician demands, which in turn are related to patient wants and needs as well as to the more mundane considerations of professional income and status. Dr. Banta has noted the distinction between half-way (or non-definitive) and potentially curative technologies. His paper predicted further expansion of the non-definitive technologies which will, at great expense, increase marginal effectiveness in dealing with a given medical condition. This prophecy is likely to be fulfilled. Aaron Wildavsky's "law of medical uncertainty" (1977) tells us that there is always one more thing that might be done, and literature and mythology inform us of human beings' ultimate unwillingness to confront their own mortality. As technology offers us more and more ways to delay death, we will find these offers remarkably difficult to decline. The story of Faust has always seemed applicable to health care policy. (Indeed, Faust can be read as a strong argument against the assumption of time invariance in decision making; his revealed preferences, on the basis of a discounting of future benefits, were clearly not stable over time.) The public acceptance of non-definitive technologies will be further influenced by the phenomenon of "identifiable lives." Calabresi and Bobbitt (1978), in their book on the difficulty of making "tragic choices," note that society finds it almost impossible to make explicit its decisions to ration services. We can decide that installing warning beacons in private airplanes (or better air traffic control systems in small airports) is not cost-effective. When an identifiable small aircraft crashes in deep bush, we willingly spend far more on the search and rescue efforts. Similarly, the costs of making mines safer may be considered too high – they benefit statistical lives. The costs of rescuing trapped miners – often far greater – are borne; the lives can now be identified. As those who might be saved by an intervention can be identified and named, it becomes remarkably hard to refuse on the rational grounds of insufficient cost-effectiveness. Cost-effectiveness ratios notwithstanding, it would be extremely difficult in many societies (including Canada) to deny heart transplants or hospital dialysis for purely economic reasons once medical results have become satisfactory. These decisions might seem emotional, intuitive, or political, but we must recognize that economic effectiveness is only one of the values held in our society, and that it is not necessarily the most important.

End-stage renal disease (ESRD) provides an object lesson. Dialysis became an insured benefit in the United States when patients with kidney failure dialyzed on the floor of the U.S. legislature and gave the public identifiable victims who would die without that service. Those early victims were highly motivated and had little co-morbidity; they tended to return to a productive worklife. Once renal dialysis was publicly financed, it was extended to older and sicker patients. These individuals were less likely to remain employed, needed more support services, and incurred higher costs. Early projections of the costs of the ESRD program were dramatically inaccurate, and the program had the dubious distinction of helping to kill the prospects for further extension of national health insurance in the United

States. An unfortunate conclusion has been drawn from the ESRD program; policy makers concluded that the costs of any guaranteed medical program would exceed projections because it would be impossible to limit patient pools. In our current era of Charters of Rights and Human Rights Commissions, it will probably become not only impolitic, but illegal, to discriminate in the allocation of scarce medical resources on the basis of such characteristics as age or handicap, even if the probability of success is decreased for such patients, as long as that probability is greater than zero. The implications for rationing schemes based on other than random principles or first-come-first-served I leave as an exercise for the lawyers. Focus has thus shifted from the miracle of saving lives to the enormous cost implications of so doing. Little wonder that third-party payers, including governments, react to new technological advances in the same way as the waiter in the limerick:

> A diner made quite a todo
> When he found a large mouse in his stew.
> Said the waiter, Don't shout
> And wave it about
> Or the rest will be wanting one too.

Delaying tactics may be seen as the only way of coping. Requests may be postponed, resources may be conserved, and the health care system may stagnate. Surely there must be a better way.

What Might be Done

Evaluation and technology assessment, as Dr. Banta has noted, in theory represent the nearest solution. If we must ration limited resources, let us judge the available services and provide those that give the most "bang for the buck." In that way, maximum health benefits will be provided. Let me play Devil's Advocate and suggest several reasons that this approach can have, at best, limited success.

First, evaluation is itself difficult; randomized controlled trials, the "gold standard" of evaluation, are often expensive, time-consuming, and hard to interpret. In addition, those who believe in a procedure will often argue that it is unethical to evaluate. The story is told of the eminent surgeon who presented his new procedure at grand rounds. A small voice from the back of the room asked whether he had conducted randomized controlled trials. "What?" thundered the doctor. "Do you mean did I take half the patients and offer them my procedure, and deprive the other half?" "Yes," was the quiet answer. "Why, that would be condemning half to certain death." The small voice persisted. "Yes, but which half?"

If we wait to assess a procedure until after it has been diffused, we are trying to lock the laboratory door after the rat has escaped. Sunk costs will still be accrued, and vested interests and habit may perpetuate even a procedure found to be ineffective. But holding back procedures until evaluation has been completed is difficult. The "defense of necessity" is a powerful encouragement to premature diffusion; faced with an identifiable patient who would otherwise be dead, only the curmudgeons among us attack the artificial heart or Baby Fay's baboon heart transplant as premature and unwarranted. In the United States, I understand that restraint of trade arguments have also been used against the technology-assessment process. Those trying to insist upon rigorous assessments may often feel like King Canute – the tide continues to come in regardless of the merits of their arguments.

We must also distinguish between two circumstances in which the expected value of a procedure is low, those cases in which all recipients may expect only a small payoff, and those offering a very small probability of a very large payoff – something like the provincial lotteries. The two situations are not analogous, and we confuse matters by pretending that they are. The latter situation, in particular, raises issues of patient autonomy. There are many people who have no wish to play such medical long shots. Major cost savings could realized along with improved quality of care if those patients could be spared painful "heroic" interventions. The development of palliative care units, for example, is addressed to this patient group. However, there are other patients who never give up, and people working with them can testify to stories of indomitable courage. These stories often end tragically, as would be expected from the prior probabilities. As the close relative of one such patient, I can testify that the high-technology care that prolonged his life is a blessing many people would choose to forego. It would nonetheless seem to many to be equally inappropriate to deny willing patients that chance for life, as long as the probability of success is greater than zero. I personally find it unfortunate that so much of our concentration on controlling the costs of technology has focused on a perceived need to deny the dramatic "life or death" interventions rather than on limiting the use of non-efficacious procedures.

In short, I think that policy recommendations based primarily on a finding of inadequate marginal benefits are likely to be controversial, and unlikely to be adopted, particularly when these findings derive from placing finite values on human lives. What strategies, then, have a better chance of success?

One strategy with potential cost savings is to target procedures with zero or negative marginal benefits (e.g., routine chest X-ray). Often, these procedures, although of individually low cost, are performed in high volume, so savings could be considerable. There is also large scope for more rational ordering of laboratory tests, many of which give little diagnostic information. However, efforts to restrict procedures with real marginal benefits, albeit at high cost, are likely to be more difficult. We could remove them from the list of insured services, thereby restricting them to those able to pay for them (rather than to those with the greatest need). This is a policy I hope would still have little appeal to most Canadians, although it appears to be of increasing importance in the U.S. system.

If I may now lift out my crystal ball, which I borrowed from the Sorcerer's Apprentice for this occasion, I think that the technological advances likely to affect clinical practice in future years will differ fundamentally from the high cost add-ons we now see. These new technologies will present us with new and different dilemmas – they will be genuinely cost-saving, but may attack basic ethical premises of our society. I am thinking particularly of recombinant DNA technology and its implications for genetic-based diseases. We are already identifying the genes associated with various hereditary diseases. Through a combination of genetic counselling, prenatal counselling, and perhaps selective abortion, we should be able to reduce or eliminate cystic fibrosis, Huntington's chorea, sickle cell anaemia, and similar diseases. The ethics may make some uneasy – who will decide which traits are undesirable? – but the cost-effectiveness will be undeniable. We should also have larger, cheaper, and presumably safer sources of biological products like human insulin, human growth factor, or Factor VIII, produced by co-operative bacteria. In the not so distant future, hemophiliacs will be able to receive prophylactic therapy without worrying about contracting hepatitis or AIDS, and diabetics may be spared the long-term complications that may result from impurities in currently available insulin supplies.

The advances in biological knowlege mean that we will probably soon understand the molecular basis of many illnesses, including the major psychoses. A "true cure" for mental illness, or diabetes, or even cancer, may be possible. In some cases, (e.g., schizophrenia, depression) cure will come through rationally designed drugs. In others, we may be able to alter the genetic material and re-transplant the patient with "corrected" cells. The moral and ethical dilemmas are again immense, but the cost-saving potential is substantial. Future conferences about technology may thus require ethicists rather than economists.

The final area in which I see technology affecting clinical practice is computer-aided decision making (Reggia and Tuhrim [eds.], 1985). Recent work, including my own, on medical decision making has suggested that much of decision making is a form of pattern recognition (Deber, in press). Expertise tends to be based upon the application of a set of skills to a knowledge base. The evidence is mounting that, beyond basic competence, we cannot teach generic problem-solving skills. For example, there is little correlation between the performance of medical students on different problems in medical examinations – certainly, there is no "history-taking skill," for example, that can be measured independently of context. For another, expert cardiologists were found to perform no better than medical students on nephrology problems – their skills did not seem to be transferable to even so related a speciality. In short, improving clinical performance appears to be vitally dependent not only upon skill, but upon giving the clinician access to the required information.

In one sense, this is disquieting. Some might argue for an abandonment of academic approaches and a return to on-the-job training. Closer thought reveals that we have no guarantee that the clinicians are currently matching to the "right" patterns, or drawing upon the correct information from their mental data base. Ultimately, I suspect that artificial intelligence techniques, particularly the advances being made by Ted Shortliffe and his co-workers at Stanford University, will allow computers to become an invaluable aid to physicians. Let me describe one such system, designed by Tim de Dombal and now in operation in several U.K. hospitals, that aids in diagnosing the cause of acute abdominal pain. To develop it, Dr. de Dombal analyzed a large sequence of patients who had presented to his hospital with acute abdominal pain for whom the subsequent definitive diagnoses were available. First, the data was analyzed to see which variables were useful in distinguishing among those with the various diagnoses. (A number of factors traditionally considered of clinical importance proved to be useless in making these distinctions.) A small data-capturing instrument, which could be quickly filled out by a tired attending physician in the middle of the night, was designed. The computer program could then spew out the probability of each of a series of possible diagnoses. So far, so good. What makes the program more useful, and more acceptable, are two additional features. First, the program can explain its reasoning and say, for example, on what basis it distinguished between appendicitis and gallstones. The clinician can thus decide whether to accept the computer's judgment. Second, the program can hunt for zebras – on request, it will identify all other conditions that had ever presented looking like, for example, appendicitis with pain in the upper right quadrant. The program performs as well as the most expert clinicians and does so consistently; it doesn't get distracted, tired or irritable. As of my visit to that centre, the program had never recommended sending home a patient who later proved to have appendicitis; it had proved especially useful as a bolster for the confidence of junior residents faced with the necessity of making diagnoses at 3 a.m. I have been told that all development costs have already been more than met by real savings to the hospital from detection and non-admission of false positives. The same approach is being extended to other disease situations, such as chest pain, and an active program is underway to develop and implement similar modules on U.S. navy submarines to augment the knowledge of medical corpsmen. A group at Harvard is actively at work on developing replacements for traditional textbooks, using Macintoshes, elaborate indexing techniques, and laser disks. As more software support becomes available, clinicians will be able to access the required knowledge base. The implications for more rational use of tests, procedures, and medical resources in general should be profound.

In conclusion, we have not been given the gift of prophecy. In any event, the curse of those so gifted is that they will not be believed. But anecdotes about the perils of straight-line extrapolation abound. I am reminded of the fears that cities would be unable to cope with the projected amount of horse manure – no one had envisioned the automobile. Wildavsky (1979) has pointed out that perhaps it is presumptuous to expect that policy makers can solve problems – the best we can hope is that we create different ones.

Thank you for your attention.

Floor Discussion

Question: *Roger Evans wrote about a "technology backlash," but perhaps he should have called it a "government backlash." Certainly in our transplant centre in Alberta there is growing concern about our rate of adopting new technologies but no evidence that we are slowing down in this regard. Perhaps the researchers in the United States are more advanced than we are, or perhaps their public is better informed. When it comes to the safety and efficacy of these new technologies, do governments simply follow public opinion?*

Answer: The question is, rather, how closely they follow it. It is very clear that the transplantation issue has been widely supported by the public in the United States. When people are polled, they speak very favourably of the whole concept. They support further development. But private insurers don't want to increase premiums for added benefits or introduce co-payments and deductibles to pass on the extra cost to the patient. And politicians say they don't want to raise taxes. While the public is supportive of new technology, the politicians are not necessarily in step with them.

We might conclude that providing heart transplants through private insurance rather than through public medicare is a scandal. Or we could interpret it as an anti-technology move by the government. In reality, the strong positive sentiment about new medical technology that prevailed 10 years ago may have shifted to one of greater scepticism.

Also, we need to distinguish between governments adopting this attitude because they are against the technology itself or because they want to control physicians' costs. The Certificate-of-Need legislation in the United States was really directed at controlling the capital costs of new technology. And the State of Victoria in Australia is considering the implementation of Certificate-of-Need legislation – not to control the capital cost of new technology but to control the expenditures of fee-for-service physicians who use the new technology.

Question: *Isn't the "death-with-dignity" movement anti-technology as well?*

Answer: This sort of backlash has existed for quite a long time. Some 15 years ago, in meetings like this one, with similar audiences, health economists in the United Kingdom were querying expenditures on expensive technologies such as kidney dialysis. If health resources are limited, we should at least adopt a rational method of limiting their use such as age of patient or some other explicit policy criterion rather than one that allocates resources on the "squeaky wheel" principle. Although the United Kingdom were querying expenditures on expensive technologies such as kidney dialysis is repeatedly referred to as scandalous, it is probably less so than limiting community care for the elderly who are totally neglected. The problem is a lack of resources.

Question: *It's going to do little good to have cost/benefit and cost-effectiveness analyses unless the information is disseminated, not only to government but to physicians and the public as well. What techniques exist for making the information more widely available?*

Answer: A data base with information about medical-test characteristics enables a physician to find out before ordering a test whether or not it is worthwhile. This eliminates unnecessary procedures and can have a major impact on physician behaviour. In addition, there are other decision support systems that can reduce unnecessary hospital admissions.

Diffusion of new technology can be controlled in other ways as well. In the United States, we have tried to ensure that reimbursement to medical centres meets explicit criteria. To qualify as a transplant centre, a medical centre must meet certain volume requirements, staffing facilities, and performance standards. We stop short, however, of saying "No, we don't need additional centres, we've got too many already." We are trying to control growth as best we can.

Question: *What kind of model should Canada develop for technology assessment?*

Answer: There are two options: either a publicly controlled open model, with the principal aim of informing the general public, or an elite model whereby medical specialists and technology-assessment experts develop information for policy decisions. Either could be developed, but the public one would be much more preferable.

Perhaps we are not giving enough credit to the systems that are already in place in Canada and the United States. When the results of a definitive study on cost-effectiveness became known, the numbers of different hospital procedures changed, and some actually dropped close to zero.

Question: *Shouldn't we distinguish between two categories of technologies: those that are directed at the elderly and those from which the elderly may or may not be excluded?*

Answer: We are in great danger of reverting to models that incorporate human capital measures. That approach leads us to the conclusion that any technology that prolongs the life of people consuming more social services is essentially of negative value. This notion of evaluating technology by the useful years of life remaining is no longer acceptable.

Dr. Banta raised an extremely important point when he asked which value judgment should be used in technology assessment. In the United States, technology decisions are made by private insurance carriers and by the political system. It is significant that private insurance carriers have now started covering heart transplants. They do so because people to whom they sell insurance are willing to pay the additional cost of having that technology covered. The public has spoken: therefore that technology is valuable.

When it comes to systems where the assessment is carried out through the political process, it could be argued that politicians are ill-informed and subject to all sorts of illegitimate pressures, but nevertheless they are elected to represent the people. Professionals administering technology, on the other hand, have not been elected. Their role is to provide expert information to either those people who they can pay for the technology or those who have been elected, so that they can decide whether the technology should be developed.

Question: *Should technology assessment take potential future developments into account?*

Answer: Today's high-cost technologies could become moderate – or low-cost technologies in the future. Roger Evans asked a rhetorical question about how Henry Ford might have resolved technology-related issues. Ford's success resulted from his development of the production-line technique and the use of standard parts. This simple concept of declining costs per unit over long production runs was rediscovered by both economists and management consultants in the 1970s and was called the "learning curve." It is unlikely, however, that production-line models will yield economies of scale in the application of medical technology, at least not until we begin receiving good care from nursing robots.

Because of the expense and complexity of today's technology, our health care system has become specialized and centralized. If one compares projections of hospital bed requirements that were based on yesterday's technology with the actual requirements, the reductions are quite dramatic. In future, hospital laboratories may provide for only highly specialized procedures. Lasers, currently being used for tests and medical procedures, may replace certain types of coronary bypass surgery. We should allow for some dramatic changes in the system in our planning for the next 20 to 30 years, because technology itself will change.

Question: *The discussion seems to have focused on high-level rather than low-level technology, which* *involves sociological interaction and community benefits for the less-advantaged people, some of whom may be elederly. Aren't we forgetting this aspect of technology?*

Answer: Assuming that we have a value system for technology assessment, there are really two problems we need to discuss: one is a macro problem and the other a micro problem. The macro problem is that in Canada we do not have any mechanism to direct the use of technology into those areas where the marginal improvement would be greatest. Instead, we have a system where hospitals, doctors, and departments are competing to get the latest gadget or to apply the newest procedure and are making use of all sorts of political or professional methods in the process. But there is no systematic way of distributing the new technology to produce the best results. The micro problem involves how the new technology should be fitted into the daily lives of physicians and patients. When a new piece of equipment appears in a hospital, it becomes the gadget or physicians, while the patients become their toys. That may be a brutal way of putting it, but it can be very difficult for elderly patients, who have little control over what happens to them. We should, therefore, not only develop new technology but adjust the system in a way that is meaningful to people.

This has a bearing on consumer information, but the question is: How much information should be made available to the patient in making decisions about treatment? As many of you may have heard, the health-care-finance administration in the United States recently disseminated the mortality statistics of hospitals throughout the country, making no attempt to incorporate the variations in case mix. It didn't take long for representatives of hospitals with higher-than-expected mortality rates to appear on TV to justify their situation. People wondered whether they should continue to use their own hospitals, and some serious questions were raised as a result.

If indeed we want to provide more information to the consumer, it should be done through physicians. Hopefully, they will provide as much information as is reasonable and helpful to patients in making their own decisions. That, however, may require a different kind of physician and a different kind of medical education.

8 Economic Limits and Bioethics

Jack Gallagher

Of the many questions which might be raised concerning our topic, I will comment briefly on three.

First, what is the meaning of the term "economic limits" as it is used in relation to aging and health care? The facts might be presented in simplified form as follows: the proportion of elderly people in Canada is likely to rise for several decades; the elderly, on average, require more health care and are less economically productive than other adults; health care, especially with the development of high-tech medicine, is becoming increasingly expensive; Canada is experiencing economic problems such as unemployment and rising deficits run by the governments which pay for health care. The question arises: can Canada afford to provide increasingly costly health care for the elderly?

I will argue, now, that my statement of the situation thus far is seriously misleading. Let us look at another set of facts. Our economy could produce many more goods and services than it now produces. There are many unemployed people who would like to be working. A number of young people are able and willing to be educated to become doctors and other professionals but they are not accepted into professional faculties because the professions are said to be overcrowded. We are not using all of our agricultural or industrial capacity. In what sense can we not afford more health care? It certainly cannot mean that we lack the productive capacity. From the point of view of productive capacity, we could supply much more health care without cutting back on any other goods and services.

On the one hand, we will need more health care for the elderly. On the other hand, our economy has the productive capacity to meet that need. The problem is our inability to apply our productive capacity to the needs of people. Even our economists do not agree about how we can solve that problem, and I am certainly not going to try to solve it here. However, I believe that one observation is in order.

If our problem about affording health care for the elderly is a problem not of productive capacity but of applying that capacity to real needs then that problem may be with us whether or not health care costs rise. Even if health care costs do not rise, we may still be unable to apply productivity to health care needs. Even if health care costs rise sharply, we can take care of them if we solve the problem of applying productivity to needs. If you are going to panic about health care for the elderly, do not panic because these health care costs are rising; panic because we have difficulty applying productive capacity to real needs. To put the matter in other words: people sometimes express concern that in the future there will be too many old people and not enough people of working age. It seems to me that this consideration is irrelevant as long as we cannot find jobs for many of our people of working age.

The second question on which I wish to comment concerns the priority to be given to health care for the elderly. Health care involves the preservation of life, and the preservation of life seems to have priority over all other values. If you lose your life, you lose all of the other values in this life. We do not even like to compare the value of life with other values. We would not want to say that this person's life is worth about $100,000 but not much more. If a mine shaft caves in, I want the mining company to spend whatever is necessary to rescue the trapped miners, especially if one of them happens to be me. We place a high value not only on life but on vigourous good health. It is a major disaster when people lose their health. From this point of view it seems that we should place a very high priority on health care, even if it means sacrificing other important values.

From another point of view we are uneasy about this high priority for health care for the aged. We recoil from the prospect of indefinitely expanding expenses for invalids or semi-invalids who are kept alive by the genius of modern medicine. Some of our unease may be selfish and wrong. We may see the elderly as those others who are robbing us of prosperity. We are conditioned to be uneasy about any large expenditure which seems not to build up our prosperity. We may cease to value the elderly because we value people too much by their economic function and not enough according to their worth as human persons. Nevertheless, there are legitimate questions here. One question concerns the value of the life and health of any person. Should we be willing to spend whatever is necessary to preserve the life and health of an individual, or are there limits? If there are limits, what are they? Another question concerns special cases. Are there certain circumstances, such as a severe handicap or pain, which make a life less valuable or not valuable at all?

In order to answer those questions we first must face a still more fundamental one: what is it that makes any human life to be valuable? We could spend many hours on that question here today and still not reach general agreement. However, several general observations might be made.

There are many reasons why we value life. We value life because of pleasant experience, a good meal, a tennis game, rest after a strenuous day. Some things which make life valuable are not easily grasped or defined, things such as friendship, intellectual activity, nobility or character, the enjoyment of beauty. Rather than try to place a precise value on such things, we accept them as giving promise of indefinite possibilities. They remind us that human existence is a mystery which cannot be comprehended easily and which manifests itself only gradually.

We value life not only because of immediate experience but also because of our philosophical or theological world views. A Christian, a Hindu and an atheistic Marxist each may value life differently because each sees life to have a different meaning.

I believe that we can never accurately assess the value of any human life, and that we can never know in any particular case whether it is better for a particular individual to live or to die. I have Christian, theological reasons for believing this, but I think that reason and human experience should convince anyone of the same conclusion. Properly to assess the value of any human life, I must first fully comprehend the meaning of human existence and understand how it applies to this particular person. I do not have that kind of knowledge, and I suspect that others do not have it either. In my opinion the central ethical issue concerning the preservation of human life is this: how can we act intelligently in view of the fact that our knowledge of the value of human life is so limited?

One aspect of this problem concerns euthanasia. We need not dwell on that aspect here, except to note that our tradition has shown a sound sense of what is rational when it rejects euthanasia. It makes no sense to kill a man for his own good when you do not really know whether it is for his good. To kill under those conditions would be to put all lives in jeopardy, because it is true for all that we cannot know whether it is better for a particular person to live or to die. The only way to protect life and avoid arbitrariness is to refuse to kill under this condition of ignorance.

The concern of this paper is with the other aspect of the problem. To what extent should we preserve life by positive means? Not knowing whether it is better for a person to live or die, we should not kill, but that need does not mean that we must preserve life at all costs and regardless of consequences such as extreme pain and discomfort. We are left with the task of finding guidelines for deciding what means of preserving life should be used and in what circumstances.

To elaborate and justify such guidelines would be difficult even if we had a lot of time. Here all I can do is to suggest several points which are relevant to allocating health care for the elderly.

1. In general life is to be seen as a great good, and therefore generally it is to be preserved, even by strenuous and costly efforts.

2. We should resist the temptation to evaluate the worth of others' lives by reference to our own attitudes. For example, I do not like the thought of being mentally retarded, so I may think that it would be better for this retarded person not to be alive. However, suppose that a superior creature from another planet took a look at you and me and decided that he would rather be dead than to be such a revoltingly low form of life. This, I hope, would not make our lives valueless.

3. Health care for the elderly should be directed towards restoring health and proper function, or at least to the alleviation of pain and discomfort. There seems to be no reason to strive by all available means to prolong life when the recovery of some meaningful form of health is impossible and when severe pain and discomfort cannot be avoided. This may seem like an obvious rule, but I am not sure that it is always observed when people approach death in our hospitals.

4. We should not allow the health needs of the elderly to obscure their other needs. The elderly need friendship, companionship and a sense of belonging. They need as much independence and responsibility as they can handle. They need a chance to develop personally and spiritually. They need to have their particular gifts appreciated, gifts

of wisdom or tolerance or serenity or a sense of perspective which may come with age. With our bias towards technology we may try to dispose of our obligations towards the aged by giving them the best of technical medical care, and forget that some human attention might be more enriching for their lives. I suppose this is an area where the state must simply accept its powerlessness to do anything but provide certain conditions in which families and friends may be able to provide for the real needs of the elderly.

5. Wherever feasible, the elderly should be helped to continue to play a responsible role in their own health care, on the levels both of general policy and of individual treatment. We do not help them when we treat the elderly only as objects of concern rather than as people who are leading their own lives.

Our third question is: are some lives more valuable than others? Is the life of a youth, for example, more valuable than the life of an older person on the grounds that the youth has a likelihood of more years of healthy life to come than has the older person? On this basis, should we spend more preserving the more valuable lives than we spend on the less valuable ones?

Ethicists disagree on this point. Rather than try to resolve this disagreement in the time available, I will give only a few of my own observations.

There are two ways of valuing a life. First, a life may be valuable as a means of helping others. For example, one might consider the life of an expert physician or a great musician to be more valuable than the life of a bank robber. Second, a life has value for its own sake. For example, one might suppose that the life of a talented and cheerful youth who can expect many years of good health is more valuable than the life of an invalid who will be in pain for most of his remaining years.

May we discriminate in the use of health care resources on the basis of some lives being more valuable than others? There are several reasons why we should be extremely cautious about such discrimination.

1. The value of life is not calculable in clear and precise terms. Because of this, we almost inevitably project our own bias into any calculation of the value of a life. An army general is likely to value the life of a good field officer above the life of a peace protester. The things a university professor values in life may not appeal to a bricklayer. Any public policy discriminating between people on the basis of the value of their lives will reflect the bias of those in power and discriminate against the powerless.

2. Any discrimination on the basis of the value of one's life must be a serious blow, if not an insult, against the self-image of those who are judged to be less valuable.

3. Discrimination of this type leads to classification of first and second class citizens, and perhaps third and fourth and fifth class citizens. Discrimination begun in health care could easily flow over into discrimination elsewhere.

4. Discrimination of this type may cause people to value life only according to obvious functional criteria, while losing sight of the mysterious dimensions which give human life its most profound value.

For these four reasons, I believe that any discrimination in health care between people on the basis of the value of their lives is justified only within very narrow limits. I will suggest some of these limits briefly.

1. Preferential allocation of health care makes sense in certain extreme cases where the health of an individual is obviously necessary for the good of others. For example, if the services of a sea captain are necessary for the ship to survive a storm, the captain should have preferential treatment in an emergency.

2. Unavoidably scarce resources might be allocated first to those who have significantly longer life expectancy. This might justify giving a kidney to a twenty-year old rather than to a seventy-year old.

3. When one cannot treat all of those in need, one should treat first those who are most likely to profit medically from the treatment. If a treatment is very likely to help X recover from the disease, but has only a small chance of helping Y, it should be given to X.

4. The preceding three points allow preferential treatment in certain individual cases when it is not possible to treat all those in need. However, on the level of general policy about supplying health care, I believe no such preferential treatment is justified. That is, we should not as a general policy decide to supply less health care to a particular class of people on the supposition that their lives are less valuable than the lives of certain others. I believe it is wrong, for example, to supply facilities for dialysis of those under sixty-five years of age and not provide it for those over that age. When we discriminate on the general policy level, it seems to me, we are implying that certain people are not worth saving. Our discrimination in certain

extreme individual cases does not have that implication. Rather, we continue to value the life of all, but in a situation in which we cannot help all, we try to help those who will profit most from our help.

5. There is another basis for preferential treatment which is often used, which is built into our health care system. We discriminate in favour of Canadians against those in distant countries. We spend large amounts for very expensive treatment for a relatively small number of Canadians while people elsewhere lack even such elementary requirements for health as sufficient food and uncontaminated water. Is this type of discrimination justified?

There are several reasons why our care should be directed first to people close to us before we attend to those more distant. First, we need some organizational principle. It is not enough to say that everyone is responsible for everyone and let it go at that. Some particular people must be assigned the care of other particular people. For example, parents are assigned care of their own children. In a less definite way, it is useful if people assume responsibility first for the care of themselves and of those close to them. This serves efficiency. People who attend to their own needs and the needs of those close to them are likely to have the motivation and to acquire the knowledge to do the job well. There is also a value in taking responsibility. It is a good thing to assume responsibility for oneself and for people close by who are in need. For one group to assume the care of an outside group may make that outside group to be overly dependent and irresponsible.

There are valid reasons, therefore, for a certain discrimination in favour of those close to oneself. On this basis one can justify a certain discrimination in favour of people in one's own country. However, there is no justification for extreme inequality. To leave people to starve, for example, usually does not help them to learn either efficiency or responsibility.

Of course, once we discuss the question in this broad context it ceases to be a problem for health care policy only and becomes a general foreign policy question. It is not a matter merely of Canadian health care professionals helping with medical supplies and services in the Third World. It is a matter of trade policies and the whole world economic order being ordered to the real needs of people. This colloquium on aging cannot be expected to grapple with the whole problem, but I think that it is a problem which we should keep in our minds.

Margaret A. Somerville

> For man has now intervened in the process of evolution, a power not given to the pre-Socratics, nor to Aristotle, nor to the Prophets in the East or the West, nor to Copernicus, nor to Luther, Descartes, or Machiavelli. Judgments of value must henceforth direct technological change, for without such values man is divested of his humanity and of his need to collaborate with the very fabric of the universe in order to bestow meaning, purpose, and dignity upon his existence (Anshen 1974, p. xvii).

This statement could also be worded as follows: "Judgments of value must henceforth direct [decisions concerning the allocation of scarce medical resources, which includes regulating both to avoid the overuse and to minimize risks of future harms of medical technology] for without [the application of] such values, man is [likely to be] divested of his humanity...." The problem is how are we to determine what values do and ought to govern, especially when the relevant values are in conflict and we must choose between competing harms. It is suggested that there are issues arising at two levels – the practical and the theoretical – in such situations. Further, some issues can only be described as "mixed" practical-theoretical ones. In all cases, however, it needs to be recognized that the designation given, in this regard, to any specified issue is somewhat artificial and will vary depending on the circumstances in which it both arises and is discussed.

Issues Arising at a "Practical Level"

Limited Health-Care Resources

We cannot spend all of our resources on health care and even if we could this would not solve all problems, because:

i) there is now more we *can do* than we are *willing* to do;

ii) there may be more we *can* do than we can *afford* to do because of the competing claims of others; and

iii) there is sometimes more that we *can* do than we *ought* to do.

A "Differential Rules" Approach

This is to raise the issue of the need to decide:

i) what we *ought* to do;

ii) what we *will* do, even if we not ought; and

iii) what we will not do, because we *ought not*.

That is, we need to recognize that not only *undertreatment* of a person needing medical care, for whatever reason this occurs, constitutes a harm, but also that *overtreatment* can be harmful, if this results in:

i) infliction of suffering on the person overtreated; or

ii) a waste of health care resources.

In the above regard, it should be kept in mind, however, that the determination of what constitutes undertreatment or overtreatment, in any given circumstances, is to some degree a value judgment.

The approach taken here is to work from a presumption that only one of the three rules listed above (that is, the "ought," "will," or "ought not" rules) will be applied in relation to a given issue arising in a health care decision-making situation and, consequently, to require that a choice be made between these rules for that issue in that situation. This I have called a "differential rules approach."[1]

Establishing a Decision-Making Mechanism

The "*how*" of deciding depends on determining:

i) *who* decides – the decision makers;

ii) on *what basis* – the substantive principles; and

iii) governed by *which procedures* – the procedural principles.

The Relevance of the Law to Health Care Decision Making

The law has had long experience with regulating decision making and, although it is certainly not being advocated here as the sole appropriate decision-making mechanism, it may contain valuable lessons which, if given wider application, could be helpful in health care decision making in an era of limited resources. For example, rules of natural justice (an impartial judge and a right to be heard), the fairness and knowing of the competing claim are just a few of the concepts that are of potential relevance.

It is pertinent to mention here that the view of many North Americans as to the role and function of law in health care decision making – namely, that it is essentially and only adversarial and litigious – is not a full historical or universal perception, although adversarial and litigious functions can play a very important role. In fact, there is often a failure to appreciate the other roles and functions of law – for instance, the symbolic and value creating, value carrying and value changing functions – which can be of particular importance in medical-legal-ethical decision making, especially in relation to the allocation of scarce resources. To quote a recent Treatise by Smith & Weisstub, "The Western Idea of Law":

> Law is a significant description of the way in which a society analyzes itself and projects its image to the world. It is a major articulation of a culture's self concept, representing the theory of society within that culture. It is the deepest and most generalized philosophical statement that a non-revolutionary or non-anarchistic culture can make about itself. The legal experience, in its most comprehensive form, is a multi-dimensional phenomenon, wherein mythic, dramatic, rhetorical, and philosophical elements play significant roles. In the West, the philosophic dimension of law has eclipsed the development of myth, drama, and rhetoric, to the detriment of cultural harmony (p.vii).

It is suggested that it is very important to keep such insights in mind in health care decision making. For instance, a law, the concrete application of which may not be objectionable in given circumstances, could well cause outrage because of the symbolism it carries or its potential to become a dangerous precedent. Or, there may be some very deep community beliefs (which might be a form of inherited genetic knowledge or reflect a "collective unconscious"[2]) which are contravened either by a given law or by a failure to enact a law to prohibit certain conduct and, as a a consequence, controversy is generated. For similar reasons, health care professionals can sometimes find, to their astonishment, an outraged reaction on the part of others in the community to decisions they take in individual cases, which to them seem perfectly reasonable and proper.

Finally, in relation to issues arising at a practical level, we need to keep in mind that questions are not neutral and that the content of current questions may reflect future trends much more precisely and offer the opportunity for greater insight into both problems and possible solutions than do our current answers. Although only an anecdotal observation and based on personal experience, it is disturbing, to say the least, that the question, whether active euthanasia (killing) of comatose, or even seriously incompetent and senile, old persons should be allowed, is being raised with increasing frequency. The persons asking this question usually justify doing so. The most common justification is either that the persons who would be the subjects of euthanasia have no worthwhile "quality of life" or, sometimes, that this would be of benefit to them, plus, in either case, and almost always, that this would be cost-saving to the community and that the money could be better used on health care for other persons.

Issues Arising at a "Theoretical Level"

Values and Symbolisms

Although it is usually taken as a "given" that we should spend money on health care and the overt reasons for this are well articulated and known, we may need to investigate further the full range of our motives, because such an investigation may explain, in part, our failure to control costs. We may spend money on health care for symbolic reasons. In an increasingly bureaucractized and technocratized society, our willingness to spend in this way may represent an important affirmation that we, as a society, believe in the worth of the individual person. If this is true, restraints on spending may not be effective because they do not address the real cause of the rise in economic cost.

It may also be that in our pluralistic, secular, Western societies, including Canada, medicine has replaced religion as the vehicle for carrying the symbolism of caring and taking responsibility for others and, as a reciprocal response to this, allowing those others both to believe that they are cared for and to feel secure. If this is true, cutting spending on health care, unless carefully handled, could project an image of "not caring."

In this regard, it is interesting to contemplate whether the concept of palliative care of terminally-ill persons was developed and implemented in medicine at the time that it was, in order, among other reasons, to function as a separate entity which could carry the symbolism and values that medicine as a whole had been carrying. Palliative care is a particularly appropriate choice in this respect because it tends to be an area, first, where there is little conflict as to what constitutes appropriate conduct; second, where the caring values predominate; and, third, where fault is much more likely to be imputed for overtreatment than for undertreatment, with a few very important exceptions. The most important of these exceptions are pain relief treatment and other suffering reduction interventions. However, almost all such interventions are low-cost or, if they are not, the costs tend to be for human services and not for high technology. There may be less reluctance to allocate money to the former type of care, than to the latter, provided such allocation is thought to be reasonable, which is likely to mean that the allocators feel that they are obtaining value for money.

The identification of palliative care as the value carrying part of the health care area could be very useful in implementing decisions regarding the allocation of health care resources which would carry the symbolism of "not caring." Theoretically, the rest of the health care area could then be separated off from palliative care and, in this separate area, conflict could be allowed to occur or steps taken that would indicate a lack of caring (for instance, the refusal to supply some forms of treatment) without totally destroying the symbolism of caring that the health care system carries and that it is important to retain.

A Decison-Making Structure

It would appear that we have neither conceptualized nor structured, adequately, decision making concerning the allocation of scarce medical resources. The substance of what is intended to be communicated here, can be envisioned by imagining that we have a middle, but no ends of a spectrum representing the issues which should be addressed. There is much general discussion and analysis of allocation problems but, on the one hand, very little research on the practical application of this analysis in identified individual cases (i.e., empirical research on allocation problems) and, on the other hand, very little development of an overall, integrated decision-making structure (i.e., theoretical research leading to the development of a conceptual instrument that could be used in addressing allocation issues).

It is proposed that we need to consider how we can begin to establish a decision-making structure such as that just described. It is suggested that, for a start, it could be developed from two groups of factors, which I have called *Decision-Making Principles* and *Decision-Making Values* (i.e., values which are relevant in that they will affect either the decision-making process, or the decision outcome, or both). Not all of these elements would be relevant in any given instance of decision outcome, or both). Not all of these elements would be relevant in any given instance of decision making, but all of them should always be considered as potentially applicable, and, only if appropriate, dismissed as irrelevant. A preliminary, tentative, and far-from-comprehensive list of principles and values, which could be considered for use in the way described, is set out in Figure 8-1.

The basic idea is that we need to go behind what we are doing in practice – and even what we suggest should be done in theory – and look for the principles and values that we are, or should be, using and to try to organize these into some coherent structure. It needs to be added that such a structure is envisioned as being dynamic and not static and should give rise to decision-making models that include the possibility of partial responses to situations and not just those which function on the basis of an approach that could be characterized as a "stop" or "go" dichotomy. In short, we need to move from a rigid, simplistic, technological decision-making model, to an abstract, flexible, protective, humanistic one. Further, it would be interesting to analyze the content of our discussion at this conference, which has taken, on the whole, a broad economic approach to identifying and solving the problems raised by the allocation of scarce medical resources, in the light of such a decision-making structure. The structure outlined clearly indicates a large range of factors, apart from economic ones, which would also need consideration.

It is not intended to imply in making the above proposal, that such a structure will solve all problems, or even most of them. We may still too often find ourselves in a world of "competing sorrows" with no harm-free choice possible. (For instance, should health care resources be diverted from current uses to carry out research on AIDS and to treat patients with this illness?) We will, however, in such situations, be more conscious of the real choices we are making and why. Further, it needs to be recognized that even the decision to adopt such an approach is not value-free. It is probably no accident that we have "hidden decision making" regarding the allocation of scarce health care resources, because, at one level, we are allocating pain and suffering, or sometimes even death, in the sense of making a decision not to avoid or relieve these where this is possible. Could it be that facing these allocation decisions directly will be more, rather than less, harmful to the fabric of our Canadian society? This is but one example of some of the questions that need exploration in the ongoing discussion which must take place regarding the allocation of scarce medical resources.

An important further reason for adopting a decision-making structure such as that suggested, is to avoid dealing with issues involving the allocation of scarce medical resources in isolation either from other allocation decisions or from the broader context of which these decisions form a part. The isolation which needs to be overcome can occur at both horizontal and vertical levels. Horizontal isolation would be present where the full range of perspectives of the various disciplines relevant to the issue being considered, either were not indicted as needing consideration or were not accommodated by the decision-making structure. Vertical isolation would occur when only the conscious level of a decision, and not its unconscious or symbolic levels, was examined.

Developing a comprehensive decision-making structure may also be important for a reason beyond that or simply facilitating adequate decision making, in the sense of both process and outcome, as an end in itself. In areas of deep controversy, where the controversy could be destructive of important societal values, institutions, community co-operation or, even, a sense of common harmony, it can be very important to identify that which we agree upon and not to focus only on our differences. It seems likely that there would be agreement that we need a decision-making structure for the allocation of scarce medical resources which will accommodate all relevant perspectives and cause them to be exposed while providing for an impartial decision maker and decision making.

This leads to a further consideration. It can be important to distinguish the decision makers from the decision-making structure which is used. Decision makers in the context of the allocation of scarce medical resources (and in relation to issues raised within the context of health care, law and ethics, in general) may often be *not neutral*, which is not the same as saying that they have a *conflict of interest*. This latter may or may not be present in addition to a lack of neutrality. This designation of a lack of neutrality simply recognizes that most of us have our own personal value positions on various matters, which are of varying strengths of commitment – that is, are of varying degrees of openness to challenge or to change. In short, it would be most unlikely that any of us could undertake to provide as a reference for appointment as a decision maker with respect to the issues involved in the allocation of scarce medical resources, that personally we are neutral in the sense of being value-free in these regards.

Figure 8-1

Proposed Model for a Decision-Making Structure to Deal with Dilemmas Raised by the Allocation of Scarce Medical Resources

Decision-making principles

Overt and latent principles.

Overt and latent decision making.

Direct and indirect decision making.

Distinguishing "right" decision-making procedures and "right" decision outcomes.

Risk by choice and risk by chance.

Initial presumptions.

Bases for deciding who should decide:
- at a collective level;
- at an individual level.

On what basis is the decision to be taken and according to what procedures?
- reasoned cf. intuitive decision making;
- substantive rules;
- procedural rules;
- other procedural devices;
- emerging principle of integration as basis for decision making;
- consider theories of decision making:
  1) Fried;
  2) Rawls;
  3) Fletcher;
  4) Engelhardt;
  5) Allocation principle derived from a "least rights legal model."
- consider what basis used for allocation does:
  1) to allocatees;
  2) to allocators.

Decision-making values

"Quality of Life" / "Sanctity of Live."

Distinction between acts and omissions.

Characterizing what is being allocated.

Personal identification.

Risk/benefit calculus.

Cost/benefit calculus.

Proportionality principle.

Protecting individuals cf. protecting networks.

Individual rights cf. collective rights.

Figure 8-1 (concl'd.)

Decision-making values	Values related to theory on the nature of professions.
	Uncertainty.
	Economic cost – as a decision-making value in sense of getting value for money.
	Language – labelling as a value creator and projector.
	Fear and avoidance of legal liability: – liability of statutory authorities; – defensive medicine.
	Attitudes of physicians: – overtreatment as a result of optimism of physicians; – initial presumptions of physicians.
	Physician-patient relationship.
	Characterization of medical technology; 1) Positive technology; 2) Neutral technology; 3) Negative technology.

Our decision-making structures can, however, provide this neutrality to a greater extent, although it needs to be recognized that they also are based on "decision-making principles" which also have a value element, at least in their concrete application. For example, one decision-making principle is that we must start from one of two possible "initial presumptions." These are either that *yes*, this conduct is allowed, *but* there may be exceptions, or that *no*, it is not allowed *unless* certain conditions are fulfilled. The choice between these presumptions is not neutral in outcome, because in situations of equal doubt the initial presumption, not the exception, will govern. Further, this choice may be dictated by fundamental values in a given society. For instance in our Canadian society we pride ourselves on being an open legal system (that is, that everything that is not prohibited is permitted) which would indicate that a "yes ... but" initial presumption should be adopted and not a "no ... unless" one. In short, a *neutral* decision-making structure is not entirely value-free. However, it should enable those values which are present to be identified.

Finally, in relation ot the suggestion of a need for a decision-making structure, it might be that developing, implementing and further developing such a structure could encourage creative and imaginative thinking in addressing the problems posed by the allocation of scarce medical resources in an aging population. It hardly needs to be said that such thinking is badly needed.

"Mixed" Practical-Theoretical Issues

Human Rights

It may even be that the urgency of undertaking discussion of the issues involved in allocating scarce medical resources has been exponentially augmented in recent months. The AIDS epidemic may cause us to be faced with problems in this regard of a magnitude that will make the dilemmas inherent in the original subject of concern for discussion at this conference – how to meet the health care needs of an aging Canadian population – appear small, by comparison. These problems and how we deal with them, in particular, whether our commitment to compassion and human rights exists only as a theoretical construct or also as a practical reality, will tell us much – some of which we may not want to hear – about the fundamental ethical tone of our society.

During recent years, each of the provinces and promulgated "Human Rights" Codes or Act and, recently, the *Canadian Charter of Human Rights and Freedoms* has been enacted. In combination, these laws represent an important articulation of the values, policies and attitudes of Canadians and Canadian institutions concerning human rights. It may well be that issues arising at the interfaces of medicine, law and ethics will test whether these statements of commitment to human rights reflect a true and deep reality in Canadian society, based on firmly held beliefs, or whether they are merely a fashionable "paper tiger" which will burn when challenged by any threat of real risk to the persons who purport to hold such beliefs, in that they are only prepared to do so when this involves no potential cost to themselves. That is, in examining issues in this area, we may expose hidden inconsistency or ambiguity between our attitudes to human rights in practice and in theory.

But, the "medical model" is not only important in discovering the real nature of our concepts of human rights, but also, possibly, in developing or changing them if this is what we want to do, or if change is needed. This is true, it is suggested, because, in such situations, unlike those more foreign to our Canadian society, such as torture, we can personally identify with breaches of the human rights of others. Moreover, we are more likely to be personally threatened by what is done to, or not done for, persons in relation to health care (for example, a denial of necessary medical care), because we are all potential patients. This personal identification can raise sympathy for persons harmed by breaches of human rights, not only in the medical context, but also in general, and, consequently, it has an important educative function in this regard. Further, and in some respects most importantly, personal identification with breaches of human rights and the emotions generated by this can also trigger appropriate remedial conduct.

Law and Love

This text starts with a quotation from the prologue to the *Art of Loving* and I would like to turn to the theme of love.

I heard recently that love and law are the only two things that, in the future, will distinguish human persons from advanced computors and robots. I would like to think (because I love law) that law is an expression of love. It may be that this is the issue – namely, whether our law reflects love – that we are dealing with when we ask what lessons the law has to give us about, and how it should be used to regulate, the allocation of scarce medical resources. To the extent that it is necessary to use law to govern allocation decisions, I suggest that we should allocate on the basis of a law informed by love. Not love in a romantic sense, nor even in a self-sacrificing sense. But love in a "love your neighbour as yourself" type approach, if this is at all possible.

It may well be that, in the allocation of scarce medical resources, we are facing one of the most difficult situations our society has encountered, because:

- we are allocating pain and suffering or even dealth;

- our decisions not only affect the allocatees, but also they affect us as allocators in terms of detachment, depersonalization and brutalization; and

- our decisions tell us much – again some of which we may not want to hear – about the nature of our society in terms of: compassion; our commitment to equality; our ability to face common problems with collective resolve; the balance we strike between rights and protections of the collectivity and the individual; the strength of our altruism; and our capacity to make voluntary efforts in the public interest.

Medicine and Religion

Parts of this text may sound rather more religious, than legal or scientific and, therefore, may be thought to be an inappropriate approach, at least for a lawyer. But, to the extent that this characterization as religious is accurate, it may be no accident that it is adopted, because it may reflect a phenomenon operating in relation to medical-ethical-legal issues which needs to be identified and articulated. It is interesting to contemplate that medicine may have replaced religion, to some degree, in terms of being a "modern miracle worker" and having a potential to fulfil some of our needs for mystery and mysticism. This may have occurred, in part, because medicine is one of the few institutions in our society to which everyone in the community relates, whether with positive or negative feelings.

If it is accepted that medicine may have taken over some of the institutional and symbolic functions of religion, it should come as no great surprise that people can become angry when the medical miracles to not eventuate. Miracles may be expected of religion (however unrealistic and unreasonable such expectations are) and disappointed expectations are often a source of anger. But, it is even more understandable that people can become angry when the potential or chance of a miracle is available, but is denied to them, either because the miracle-working technology is diverted elsewhere – especially if there is a deliberate and identified choice to give it to someone else – or because access has simply been denied whether for justifiable or unjustifiable reasons. At one level, this anger and dealing with it appropriately, is the dilemma raised by the allocation of scarce medical resources. While the Church's supply of forgiveness for sins and grace and indulgences, was unlimited, medicine, the religion of the 20th century, is more limited and, unfortunately, we cannot perform "the miracle of the loaves and fishes."

It is paradoxical that our success has brought us this dilemma, which has ramifications far beyond the health care arena. And yet it may be by working from simplicity (and clarity) to confusion, to perhaps different confusion, to clarity (and again a different clarity) that we can advance as truly human persons. Modern medical technology is presenting us with opportunities, problems and a challenge. While one advance may create more problems, a further advance may solve some of these. We are exploring new transdisciplinary continents in these areas – it can be dark and dangerous, but it is exciting and productive of growth. What we need is courage, honesty, integrity, faith, hope and charity. My secretary misread, in the first version of this text, the word charity for clarity – I think she was correct, we could well add clarity to our list of requirements and if I had to choose a theme for the message I would like to deliver, that would be it – striving towards clarity (enlightenment) in our allocation decisions.

There may even be another reason why it is no accident that I have used religious metaphors in this context. As indicated in the decision-making structure outlined in Figure 8-1, there is a need for integrated decision making in allocating scarce medical resources, and close to home for me and related to this, is the need to reintegrate medicine, law and ethics, in order to solve some of the dilemmas of decision making raised by modern medical technology, including the allocation of scarce resources.

In this regard, we are attempting at the end of the 20th century to recreate a situation that existed in the 12th century when the three celibate professions of law, medicine and the clergy were integrated. However, what we have is not a pendulum model, but a spiral one. Our reintegration will build on and include what we have learnt during our separation and therefore will be very different from its predecessor. Whether this "remarriage" proves to be successful in helping to solve the dilemmas raised by the allocation of scarce medical resources in an aging population will be tested by the answer to the two questions: "Can we live with our decisions?" And, even more importantly: "Can those affected by our decisions live (or sometimes die) with them?"

Sister Nuala Kenny

Health care ethics has become an "in" topic. Just about every health care body that I know has had a recent discussion, debate or retreat on health care ethics. Despite the present public interest, the issue of decision making around health care resources is not new. It may be true, however, that the decision making has become more difficult. The rapidity of modern technological advance has made the classic moral distinction between ordinary and extraordinary means virtually useless. The expense of the marvelous scientific and technological achievements of our era certainly raises the question, "is it worth it?" for a very consumer-oriented society. Perhaps more importantly the different values assigned to the technological advance and to the cost have forced us to look at these issues with much more care than previously. Decisions are always difficult. Decisions about life and death, health and illness, and human suffering will always add a more human and perhaps a more vulnerable dimension to the logic of decision making. What is becoming more clear all of the time is that the distribution and utilization of health care resources is a public issue. As such, ethical sound decision making cannot occur until the values in question are clarified. The clarification of individual values is a first step. The clarification of whether or not there is truly a public ethic is yet another step. Let us reflect together then on some of the issues that need to be clarified if we are to make any steps at all.

What Is Health Care?

What is this health about which we care so deeply? It is very clear if we reflect on the question, that health is more than the absence of disease. At our best and deepest moments of appreciation we realize that health is a positive experience. It is the full functioning of human potential. This potential is not simply physical, but intellectual, emotional, moral, aesthetic, social and political. Because health is this full and complex reality, it is a misconception that we can "buy" health through the acquisition of advanced technology alone.

What Are the Expectations of the Public in this Regard?

Do the people whom we serve really understand the limits of human science? Has every area of disease now become a matter for medical intervention? What is the place of modern technology in truly compassionate health care? Just how does our perception of health affect the establishment of public priorities? And perhaps more importantly, are we really willing to pay the price of our expectation?

What Is Our Philosophy of Health Care?

In order to begin to answer some of the above questions, we must clarify our personal and communal philosophy of health care. My own commitment to health care is based on two assumptions: first, that each person bears the primary responsibility for their own health and the right to control over it. And second, that each person has the right to the care and help of the community when they are unable to care for themselves and a reciprocal obligation to help others in similar circumstances.

Both of these assumptions bear further reflection in our time. With the increased professionalization of every aspect of human life and behaviour, we really have to ask if we are properly encouraging and facilitating individual assumption of responsibility for health. On the other hand, we really must be willing to pay the price for assisting legitimate need. Too often the questions around priorities in ethical decisions are different depending on whether it is you or a member of your family as opposed to some anonymous individual receiving the care.

What Is Ethics? What Is Its Place in Medical Decision Making?

While there is a fair amount of public discussion about the need for ethical decision making in medical matters, there is a general reluctance on the part of health care providers who actually make individual patient decisions. Some of the reluctance and underutilization of established ethical committees stems from ignorance. Ethics is the dicipline of right and wrong. Ethics deals with formal procedures for decision making. It does not dictate individual decisions but rather sets in motion the practice by which decisions might be made well. But decisions are made in the context of a specific value system and it is at this stage that we need further reflection. In a simpler time when it could be assumed that most of us in North America were operating out of the Judaeo-Christian ethic, there was little need for the formal enunciation of values. An assumption was made that we shared similar basic values. With the increasing pluralism of our society, it is very clear that the range of value systems has become wide and frequently value systems are set in conflict. There is hardly a single value that might be considered traditional that would not evoke debate in any randomly selected group in our society. Discussion and clarification of these differences is difficult for all of us in society. Medical decision makers who are in a particularly influential and sensitive area have as much difficulty in clarifying issues. Their decisions, however, are open to public scrutiny. Moreover, if the clinician is to truly serve the needs of patients and families then some clarification about their value systems must be taken into account in any decision making.

Because an ethics of health is also a politics of health, the present financial restraints on health care systems challenge communities to clarify value systems. Simply put, with limited resources – and they will always be limited – we must look carefully at how to make decisions.

What Is Financial Restraint?

Why do we have to make decision within resource limits? Is it because there are truly limited resources or that the community has decided to limit resources for health care? In an era of ever increasing expectations of the health care system and increasing restraints, the community must become directly involved with the establishment of priorities. Each and every member of the community served by a health care system must acknowledge that limits in resources mean a limit for them, their needs and the needs of their family as well as for "others."

Society as a Caring Community

The basic assumption that underlies all of my comments is that society has, as an ideal, a caring community. Health care is no longer a simple person-to-person relationship. The day of the lone family doctor dutifully making housecalls is gone. Health care delivery today, while still based on a personal encounter, is enmeshed in a very complex set of interactions. How have we arranged this system? Have we begun to ensure that the decisions that are made preserve both the integrity of the individual and the integrity of the community?

While there are elements that relate strictly to medical decisions, there are more and more circumstances of complicated decision making that involve individual rights, family responsibilities, hospital policy, limited resources, etc.… If we are to provide truly compassionate and competent care, we must be willing to pay the price for the development of health care technology and at the same time ensure that decisions are made justly and fairly.

Floor Discussion

Question: *Margaret Somerville's statement suggests that reduced health care expenditures imply less care. Would the reverse proposition – namely, that increased health expenditures imply more care – hold true as well?*

Answer: We used to think that medical care could be divided into two groups, but now we have three groups: undertreatment, overtreatment, and appropriate treatment. Both undertreatment and overtreatment legally constitute malpractice, whereas previously the only identified malpractice was undertreatment. It was almost unthinkable that overtreatment could have been malpractice.

Question: *The more we look at the issues, the more we feel that there is a single answer that eludes us. That ultimate answer seems to be more religious than ethical; and if so, it is not clear that we can all agree on what the ultimate solution would be. How can this paradox be resolved?*

Answer: Ethical difficulties in our society have a religious basis. That can lead to serious problems. When you do not have that basis, the temptation is to retreat to something else. What is necessary, it seems, is a two-pronged approach: one is a clarification of those areas where we can't reach an agreement because of religious differences; the second – after taking a look at our daily experience and our historical tradition – is a clarification of those areas where we find a good deal in common. Rather than say that ethics are not giving us very much, we need to make this arduous, intellectual effort.

Question: *Should ethics committees resolve problems at the physician or patient level?*

Answer: Ethics committees have popped up all over the place in North America and are probably becoming a prerequisite for hospital accreditation. They are not really used much, precisely because doctors fear that they will be told what to do at the level of micro-ethics.

The biggest concern people have is that the base for decision making is too narrow. There is a medical input, a family input, a hospital input, and perhaps a legal input.

As a doctor, you realize that the conflict is at the very basic level. Do we discontinue life support; do we not? Do we continue to resuscitate; do we not? This is where you touch base and come to understand that the disagreement can be very fundamental.

The function of ethics committees is not to take responsibility for the final decision but to help the individuals involved clarify what they consider to be most important in this situation.

To give just one example: Because of my faith I don't happen to believe that the worst thing that can happen to you is die. I am a doctor, and I won't let you die without having given you all the medical care that is reasonable. I have treated children with leukemia, knowing what is going to happen after a second or third round of chemotherapy. In fact, sometimes I'm happy to sit down with a family and say, "Let's talk about what we're dealing with here." When an individual feels that there is nothing but this life, here and now, the response is profoundly affected by that. Ethics need to clarify why we are disagreeing at this point. If they are to provide any hope for us at this stage, they must aim at the real root of the dissension.

Question: *What rules can hospital administrators follow to make better ethical decisions, and how can they be trained to do so?*

Answer: In decision theory we look at levels of decision making.

Hospital administrators would be on a different level of legal and ethical decision making than would the individual physician in a physician/patient relationship. For instance, if a physician were to decide not to treat a patient but to save the resources for someone coming in later, it would be a breach of personal trust that is inherent in the physician/patient relationship. For you, as an administrator of a hospital, to decide to have a gerontology unit rather than a prenatal-care unit would not necessarily be unethical even though you know that there will be some victims as a result of that decision.

To pick up on what Sister Kenny has said, there is very big movement in Canada at the moment to set up proper ethics committees in hospitals, such as infant-care review committees, research-ethics review committees, and clinical-ethics committees. And often there isn't a right decision, but there is a right decision-making procedure; and that requires the use of such ethics committees.

Physicians are terrified that this is going to be like a witch hunt. It will require a lot of education: you will need to educate youself as an administrator, and then you will need to educate your staff. And one way to educate the staff is to establish an ethics committee. It's almost like an instant two-way function. The ethics committee doesn't know what it's doing, nor does the staff; but they all learn together.

Question: *It raises some concern when people claim that the role of the priest has been pushed onto physicians and other health professionals. For thousands of years, perhaps, the sick have preferred the physician, because the physician didn't have a strong religious bias. Religion can lead to division rather than unity, and what we are trying to achieve is a more open discussion without biases. Of course, nobody is unbiased: we're biased pro or against the existence of God. Therefore the public should become involved – not because people have the technical knowledge but because they have a personal feeling of what is right or wrong. The question is: How can the public become more informed and get involved in this decision-making process?*

Answer: If you review the history of medical care, it will become quite clear that this care was always mingled with the mysterious and that the religious element was mingled with knowledge and science. Then came the scientific revolution and the new technology of the twentieth century; they took the pendulum to the extreme, where technology overwhelms everyone in health care. Although we are still at the extreme, we are beginning to realize that a compassionate awareness of the mystery of a human interaction with suffering is the companion piece of total care. We must therefore humanize the use of medical technology and not let it use us. Parent, family, and patient groups must be formed around particular health care problems. Yet the primary responsibility for educating them to an awareness of all the benefits rests with the health care team. That assumes, of course, that the members of the team have reflected on the potential benefits, as well as the limits.

Our own traditions have embodied religion in different ways, but even if we were to reduce it to someone's ultimate interpretation of reality, we should not expect to find unity. And we can't achieve unity simply by saying, "Let's disregard sectarian religion and come to a philosophical basis." Although we shall not easily unite, we should not despair in working towards unity. We do have an innate need for mysticism, and that has been transferred on to medicine. We used to speak of miracle religion; now we speak of miracle medicine. This shift in terminology is not an accident.

Within the context of this question and the preceding question on the role of the administrator, it may be useful to paraphrase the last sentence of Sister Kenney's presentation. She states, "If we are to provide truly compassionate and competent care, we must be willing to pay the price for the development of health care technology and at the same time ensure that decisions are made justly and fairly." The paraphrase would be: "If we are to provide truly compassionate and competent administration, we must be willing to resist the price and pace of the development of unevaluated health care and technology, and at the same time ensure that decisions are made justly, fairly, and without undue delay."

9 Canada's Future Health Care Program

Claude E. Forget

There is a large element of paradox in the choice of the topic for the present discussion. According to the axiom that says "if it ain't broke, don't fix it" there is room to question the wisdom of a scrutiny of, and debate about, the structure of our Canadian system for health services delivery. Are we not generally rather pleased with the obvious success of that system in improving life expectancy over the past quarter century, in providing fairness in the access to these services for everyone irrespective of ability to pay and in making all this possible in an economically and fiscally responsible way? Do opinion polls not consistently document a high degree of popular satisfaction with the system? Do government budgetary policies not provide evidence about the rather high priority given by our politicians to health expenditures in a fiscally difficult period? Experts may quibble about the reality or the durability of those achievements, this or that group sometimes with the unstated (unconscious?) aim of improving their own incomes or enhancing their conditions of work may criticize the system and denounce what they see as "underfunding." Occasional instances of service breakdown may surface in the media or before the courts. However, all that apparently causes as few, if any, ripples in the natural mood of self-satisfaction about our national health insurance system as the proverbial stone hitting a tar pit.

Dimming ever further the saliency of structural considerations, voices are heard that belittle the importance of our health services system focused as it is on a - curative approach and would consider any tinkering with that – in their view – overrated system as a waste of time and energies better devoted to the development of a more fundamental health maintenance strategy.

Therefore, as we see, the reasons for leaving well enough alone are many and they may well prevail whatever we say here today. The opposite reasons, suggestive of a need to reexamine the health services delivery system must be carefully scrutinized. They must not only be valid but also strong enough to overcome the arguments in favour of the status quo.

This paper makes two points. First, I attempt to draw up a picture of the strengths and weaknesses of our Canadian health insurance program. Canadians are of two minds with respect to that program: they appreciate its many good points but they also express reservations about its operation and rationale. The fascination expressed in many quarters with privatization (under one or another of its several guises) or some by-products of the largely privatized U.S. system provides testimony that there exist qualities in health services delivery system that still elude us. My second point consists of a sketch of an alternative structure for health services delivery system – an alternative, however, not based on privatization. The two points are naturally meant to be interrelated despite appearances. The suggested structure constitutes an attempt to overcome the latent deficiencies of the existing arrangements going beyond the mere accounting and managerial options that are presented under the label of privatization.

Needless to say, all that is put forward rather tentatively with the expectation and intent to stimulate controversy and debate. However, this is not a gratuitous exercise; it is based on the conviction that the long-term dynamic characteristics of our present system are slowly but inexorably taking us away from where we would prefer to be.

Part I: Strengths and Weaknesses of the Canadian Health Insurance System

The topic of this session is not, after all, so much of a paradox. Canadians are satisfied with their health insurance system but they can also think of many things that are wrong with it. It is worth our while to survey all these qualified statements of support that can take the stylized form of "yes our health care system is a good one, but this or that feature is deplorable." This is almost as embarassing to do as asking a child what he thinks of his parents and getting back the answer: "I love them but they quarrel too much ..." let alone other possible answers that are best left to your imagination! The embarassement is due to several factors to which I will turn to later.

The Qualified Approval of the Existing System

It is easy to draw up a list of grievances that in almost all cases are preceded by the usual genuflexion to the merits of the health system:

1. The Canadian public is generally happy – so the polls say – with our national health insurance system but complaints are heard about waiting whether in outpatient clinics or for elective surgery, about inadequate facilities and insufficient support services especially for the elderly.

2. The competence of the medical profession earns them respect and status but the parallel health professions and techniques from herbal medicine, acupuncturists, exotic massage therapies, etc., are in increasing demand. Perhaps more significantly, the status of the healer is undermined by the cultural revolution in health maintenance that consist of the personal responsibility now widely recognized for life-style decisions reflected in fitness programs, dietary changes, decline in smoking, right up to self-administered diagnostic kits and devices.

3. The contribution of our publicly funded system of universal access to health care and to less social inequality is applauded but strong pressures exist for overbilling and user fees that would reduce that contribution.

4. The medical profession no longer fights medicare and may even have some nice things to say about it but it complains about underfunding.

5. Expert health economists proclaim that our system is at least as good as any other but they also point out that it contains no incentive to do many of the "right things" that a health system should do and some incentives to do some of the "wrong things."

6. In particular, most of us subscribe to the view that our system certainly is preferable to the U.S. health service industry but at the same time we are fascinated by U.S. innovations in the delivery of health services, their organization and financing (HMOs, hospital chains, DRGs.).

7. Hospital administrators claim they know about all the tricks in hospital management that can boost productivity but they don't appear able to implement them or rationalize operations without substantial help or push from governments.

8. Experts say that our health costs are comparatively reasonable and their growth well in check but politicians and others believe they are out of control.

9. Canadians would arguably like more to be spent on health services but as taxpayers they find their taxes are too high.

This list was not compiled only to be facetious. These complaints about the system, one can dismiss as illustrations of inconsistency or evidence that human beings tend to behave like spoiled children. But why should anyone be so condescending? Unless one is determined to defend the status quo at all cost why should we not take these complaints seriously? One may of course pretend to do that and then dismiss every complaint as ill-founded, exaggerated or self-serving and therefore of no importance. That may indeed be the case for some specific grievances but I believe that behind those grievances lies something more important, a fundamental flaw more significant than any of the particular symptoms that give rise to this or that particular complaint. That flaw resides in the *powerlessness* of all the players in the system. The health insurance system is not bad – indeed it is very good in most respects – but it is from anyone's perspective an immovable object. That inability to influence in a perceptible way the size, composition, evolution of the system leads everyone to a sense of frustation, staleness, resentment that is proportional to the expectation of various players that they should be able to have an impact. Each category of players easily assumes that other players do have an influence and that assumption does *not* need to be accurate to compound the frustation. Is it not true, for instance, that

– There is little possibility for consumers to express a preference for more or different types of services than those currently offered and, even when there is, little likelihood that these preferences will have a determining impact on resource allocation.

– There is no way for professionals to autonomously innovate and expand their activities by meeting or anticipating demand.

– There is no way for managers of institutions to make real choices in resource allocation, organization and institutional orientations.

– There is no way for governments to encourage greater effectiveness or efficiency – the only implementable concern is cost containment.

To say that there is "no way" for anyone to have a significant impact on the system is only a slight exaggeration – if it is an exaggeration at all. That state of affair is not entirely the outcome of conscious decisions:

the contemporary health services sector, in any setting, is one of the largest and most complex sectors of our economy and society. No one, not even government or a large multinational corporation can unilaterally decide what happens in any very large industry. But that difficulty is compounded in the health services sector by the nature of the system put in place to provide universal health insurance.

Factors Behind the System's Rigidity

When Canada introduced a national health insurance scheme in the past quarter century, it did so gradually. First, hospital and diagnostic services coverage was provided from the late 1950s and only later were medical services covered in the late 1960s. In both cases, the purpose of the system was to pay the bills. As one author has described this it was "financing without organization." When the system was introduced it was presented not so much as a profound structural change as a substitution between alternative so-called "third-party" sources of funds: governments replaced private insurers but did not pretend to run health services.

This self-denying ordinance on the part of governments was the price that had to be paid to overcome the resistance of the medical profession. There was much fear of "socialized medicine" in their ranks and it was not easy to persuade the public that its fear was unfounded except by disowning any intent to go beyond paying the bills.

The fiscal context of the past 10 years or so gradually revealed that the new financing arrangements in health services were indeed equivalent to a structural change. Whereas private insurers (as U.S. experience has shown) would have passed on cost increases to premium payers, governments were not content for long to accept such a passive role for themselves and efforts were soon made to control costs, thereby altering the real structure of decision making. This has resulted in a much centralized system that has made its influence felt mostly in the negative: not much of anything can be done without government authorization but instances of a positive utilization of that centralized authority are much less frequent.

Maynard in an examination of the relative merit of different modes of organization for health services, comments that the planning authority so clearly implicit in the wide powers of the British government vis-à-vis the British National Health service, has never been effectively used to set objectives and develop strategies! (Maynard 1982, pp. 504 and 509). It is ironic that the same author seems to find in the low level of administrative costs in the British system an occasion for a favorable comment! (Maynard 1982, p. 493).

Another factor that tends to mask the implications of structural change in the system, resides in the characteristics of that structure both originally and now. Hospitals that are such an important component of the total system constitute an outstanding example of what Mintzberg (1983) has called "professional bureaucracies." Such organizations make minimal use of top-down supervision and direction. Entire fields of operations are left to the discretion of the self-directed professionals: administrative authority is narrowly circumscribed so that whatever is done to alter the locus of that administrative authority has a limited overall impact, at least until other things have changed as well.

The structural context enhances the importance of the organizational culture that has prevailed in our health services delivery system. That structure has given to the physicians autonomy for themselves as well as authority over "paramedical" staff on the implicit understanding that the physician is governed by the strong professional culture of the Hippocratic oath that is a part of the organizational culture of the health system.

The "hands off" attitude of the federal government has not been compensated by any greater willingness to run the health services system on the part of provincial governments. At the provincial level – even in Saskatchewan or in Quebec, where there perhaps were the clearest demonstrations of a political will to play an active role – most of the measures taken in effect skirt the major issues or have been direct consequences of expenditure control priorities: there has been some refinement in techniques of budgetary control, some rationalization of hospital purchasing, some successful reduction of the number of acute-care beds but hardly anything that could be called a systematic attempt to rationalize the system and provide orientation. The regulation of health professionals has been streamlined in some provinces but the status of the medical profession not really modified; even Quebec's determined efforts to alter the style and nature of health services delivery through the building up of a comprehensive network of CLSCs ended up as an add-on to the system rather than as a substitute to the more traditional approach.

If physicians' apprehensions about "socialized medicine" have largely faded, I detect a more recent source of rigidity in the system. Existing social policies are often the symbols of ideological battles of another era. Those who see them as victories for "their" side in these ideological disputes, tend to consider these social policies as sacred cows and to resist even critical analysis of these policies let alone actual changes in them.

Health policy planners have an obvious bias in this discussion. They tend to like a system that is very responsive to government policies and priorities because most policy planners are optimistic: they easily see themselves or like-minded people in the driver's seat. A centralized system giving governments a large say in health services delivery appear to many well intentioned students of health systems as a step in the direction of an enlightened society. Is it really so?

It would be an exaggeration to say that health policy planning is alive and well in Canada. If the ability to plan that a centralized system is supposed to provide is one of the important arguments supporting the status quo, then the status quo must surely be questioned.

What Could Be an Appealing Alternative Arrangement?

If powerlessness constitutes the common element behind most instances of frustration with our present system – as I believe it does – there is little surprise in the appeal with which privatization is considered. Privatization certainly sounds like the sort of change that would give individuals and particular institutions hope of having an impact on events.

Privatization or, more accurately, the public vs. private mix in the financing and management of health services system is not just a frequent topic on the popular media and in political debates but it has also spurred a number of learned publications not least of which is the admirable survey of the issues carried out last year by Professors Stoddart and Labelle (1985).

There is a remarkable gap between the experts on the one hand and the general public and politicians on the other, about the issue of privatization. The experts have little good to say about privatization as a remedy to the problems of our health insurance system. To be fair, let us attempt to review briefly their main conclusions:

1. Co-insurance schemes (user charges, deterrent fees, etc.) could certainly, if they were high enough, help reduce the cost to *governments* of providing health insurance. But that would not necessarily reduce total health services system costs, indeed, it might increase those costs as U.S. experience seems to indicate. This would not help Canada's competitive position (for those concerned about that in the incipient Canada-U.S. free-trade debate) because employers would pay the same or higher health costs in part through taxation and in part through premiums for their employees. The American experience shows that governments would still pay close to 100 per cent of health care costs for the old and the poor, who, together, may represent some 40 per cent of the total population. Thus, U.S. governments underwrite 62 per cent of total health services costs but only cover that 40 per cent that make the most intensive use of those services.

An extensive use of co-insurance increases administrative costs – potentially by a very substantial margin – thereby reducing even further the advantages, if any, of its introduction.

2. A significant use of co-insurance principles that would be allowed to reduce consumption would likely be counterproductive from the vantange point of the system's overall effectiveness because recourse to the relatively less expensive diagnostic procedures would fall proportionally more for low-income people further distorting the consumption patterns for those services and reducing the health maintenance contribution of the system. User charges and deterrent fees would make lower-income people hesitant to consult early until health problems become too big to be ignored. The notion that user charges would only cut down on "unnecessary" consumption assumes that people consciously indulge in unnecessary services or indeed that anyone can tell in advance what is necessary and what is not. There is no rigorous empirical study to support that assumption.

3. There is little reason to believe that major therapeutic procedures (i.e. major operations) are price-elastic. A large fraction of total expenses incurred for such procedures are incurred in periods of acute illness, frequently in the six months preceding death. Those are circumstances where costs cannot be a dominant consideration. Obviously, simple lack of money could put some of these procedures out of the reach of some people. But the very possibility of such occurrences where the old and the poor could be denied access to what can be easily be described as "lifesaving" interventions, would ensure full funding of those services to members of merit groups whether by governments (for veterans, the old, the poor) or by employers (for unionized employees of large firms, managerial and professional staff and public servants). The impact of co-insurance in that context is only fully

borne by the unemployed, the self-employed and the working poor – also a situation that can be observed in the United States where the middle class is as well protected as it could be in Canada albeit at a higher cost.

To sum up, when price rationing "works" in health services it is not permitted to do so except for a small number of "non-deserving" groups. In its concrete operation, any co-insurance system is bound to be either severely discriminatory or ineffective.

4. The privatization of hospitals or of hospital management appears to be an avenue that escapes the above predicament. Hospital administration – like most forms of public or non-profit administration – is not generally regarded as particularly aggressive in the pursuit of superior performance. Could not privatization provide the incentives now lacking to improve at least the efficiency with which resources are managed in that single most important (financially speaking) segment of our health delivery system?

Unfortunately, a review of many studies on the comparative performance of private for-profit hospitals (in ownership but, more relevantly, in management) as compared to not-for-profit or public hospitals discloses either no measurable difference on the cost side or higher costs for the for-profit institutions. Where for-profit hospitals outperform public ones is on the revenue side by a more aggressive marketing of accessory services (Sloan and Vraciv 1983).

I have no quarrel with these conclusions that are well based on a large number of studies: we have to accept that a health system with co-insurance features would not be less expensive for the country and that hospitals managed privately and for profit would not be more cost-effective. However is that the whole story?

The appeal of privatization to the general public does not lie in cost effectiveness; why in a government-funded program should cost-effectiveness be a major concern of the public in any case? It is not for most government programs. Its appeal lies elsewhere, for instance:

- In the responsiveness of a privately funded activity to consumers' preferences.

- In the openness of a private system to entrepreneurial initiatives.

In other words consumers and providers of health services dream of a system upon which they could feel they have some impact – the opposite to their perceived situation of powerlessness. In such a system, *innovation* and *growth* can take place and the rate at which they take place is determined by their inherent success not by anyone's ability to persuade a higher authority – an almost impossible feat in the context of fiscal austerity.

The emergence in the United States of a number of sometimes very large for-profit hospital chains provides an almost perfect example of a development that by itself has no relevance at all to Canada but still evoques interest as an example of spontaneous, autonomously generated structural change in the hospital industry something that is quite inconceivable in this country.

The emergence of a few highly visible investor-owned corporate hospital chains has created the impression that a large proportion of U.S. hospitals belong to the "for-profit category." However that impression is misleading. From 1972 to 1982, that percentage has remained virtually constant in a range from 12.3 to 13.0 per cent with no perceptible trend; expressed as a percentage of acute-care beds, for-profit hospitals have indeed increased their share from 6.4 to 9.0 per cent, however that has been accomplished at the expense of institutional, state and local hospitals and not at the expense of non-government, not-for-profit hospitals (the kind most frequent in Canada). Indeed most of the growth in the number of beds over that decade (72 per cent) was the result of non-government, non-profit institutions' growth.

Again all this shows that the environment for a similar restructuring is simply non-existent in this country and that, even in the United States, it does not reflect an inherent "competitive advantage" of for-profit institutions vs. non-profit private hospitals of the type we have in this country. Yet it symbolizes an openness of the U.S. system to entrepreneurial moves that is lacking here; if it could be introduced in our system, it would probably find an avenue of expression appropriate to the Canadian context and quite different from the American experience.

Our Canadian health insurance program certainly ranks as a good system from almost any perspective (overall cost, contribution to health, social equity) at least in a static sense. However, it does not compare so well to other systems in terms of innovation, entrepreneurship and growth. These are also important characteristics of any system at least in the long run because of their contribution to service quality, consumer satisfaction and personnel morale. Our challenge seems to be to retain the desirable features of our present system and to develop it so as to add these other desirable characteristics.

Part II: How Would an Alternative System Look Like?

The present system places a very great burden for managing resources utilization on physicians and hospital directors. But, at the same time, it provides no incentive to physicians to do their part of that managerial job well relying instead on an obsolete notion of medical ethics. With regard to hospital management it places it at the confluent of conflicting pressures from government and the medical profession without any guidance as to how the conflict should be resolved. Systemic reform should aim at correcting these severe weaknesses.

A better system of health services delivery should recognize rather than fight or ignore, the ability of physicians to influence the utilization and the consumption of services and also their unique advantage in appraising the potential contribution that can be expected from the more specialized and expensive procedures. Once that notion is accepted, the challenge becomes one of designing a system that does not substitute for the monolithic regulatory and fiscal control of government a system equally monolithic but this time by the organized medical profession or – at the other extreme – an open-ended system devoid of any checks and balances. The solution can only lie in the organization of competitive markets for health services. Let us be honest about this: there is only one alternative mode of organization to the top-down regulatory approach now prevalent in Canada, and that is the competitive model allowing resource allocation to proceed from the bottom-up. What is involved is having consumers replace planners as the ultimate decisive influence on what the system does.

For the shift from the regulatory model to the competitive model to be successful it is essential to be very clear about what competition would be expected to achieve. Two major tasks beckon our attention: effectiveness in access to and use of health services and efficiency in hospital management.

Effectiveness in Access and Use

Our Canadian national health insurance programs have removed price as a barrier to access but, as discussed above, uneasiness lingers because of the absence of incentives for a more effective use of health services. Access to those services has to be managed with an eye to their effectiveness. How can that be done?

In the United States, Health Maintenance Organizations (HMOs) have developed the role of managing access to health services. General practitioners in Great Britain have traditionally fulfilled that function on an individual basis. In both countries, that function is funded through different versions of capitation. There is no reason why this form of organization and funding could not be integrated into our national health services program preserving its universality and comprehensiveness but transforming very profoundly the way in which the public and health services providers interact.

Contrary to the present mode of organization, the proposed system allows providers, and particularly physicians, to fully assume responsibility for an effective use of the full range of health services by members of the public registered with them. That responsibility is more than just an abstract precept but is based on financial responsibility thereby creating an incentive for physicians to wisely manage resource use. The physicians – the pivotal decision maker in this system – have to balance the pressure of the public for services, the professional standards of prudence and the precautionary norms suggested by medical liability rules against the cost of redundant or marginally useful procedures. These trade-offs are difficult to make under any system; the proposed system would squarely put that responsibility in the lap of those best trained to take it. In the present context, it is physicians who shape those decisions but with one important exception: they leave the financial consequences to others – basically governments – who in turn react by arbitrary rationing of beds, equipment, personnel....

The outcome to be expected from the proposed system would largely depend on the nature of the funding mechanism. Capitation payments should ideally reward physicians for keeping people in good health. Such a sophisticated approach may not be achievable at least for the present. However even a relatively simple capitation approach would represent an improvement over fee-for-service as long as it allowed for age and sex differences and made adequate provisions for well-identified chronic health problems. It could also be supplemented by specific incentives.

Such an approach requires moving away from the present norm of free access to all and any individual health service professional and facility. For some people, such a departure from a well-established characteristic of our present system, represents an insurmountable barrier. That view may turn out to be correct. However, let us underline here that the proposed system is not monolithic but competitive. Canadians – except perhaps those living in the most isolated communities – would continue to be able to choose where and from whom they get their health services; it is only the mode of expression of that freedom to choose that would differ; instead of making a choice for each episode they would choose by anticipation of any particular episode and for a given period of time (say a year). That freedom to choose would be very important for both consumers and providers; for the providers, it would provide a discipline, that of meeting the expectations of their "subscribers." The temptation to play God would be at least mitigated by the need to please and, presumably, the need to educate. For the consumers, the freedom to choose would continue to give them a sense of control and the periodic exercise of that freedom – if only through registration with a particular group of providers – would send a more effective signal of satisfaction or dissatisfaction because of the capitation method of funding. Under present rules, not to go back to a particular physician carries much ambiguity: it may be a sign of good health or one of dissatisfaction.

Moving from the present to the proposed system requires adaptation from both the public and from physicians. Are present frustrations with the system sufficient to trigger the change? Unless both the public and the medical profession know that there is an alternative, both groups may allow things to drift into even higher frustrations through user fees and/or strengthened government restraints. Mere talk about an alternative arrangement that only exists on paper may not be sufficient to make it a realistic option. Should not the present system be modified to allow the two modes of organizing access to health services to co-exist?

Efficiency in Hospital Management

Making sure that health services are only used when they can make a positive net contribution does not guarantee that these services are efficiently produced. Relatively simple medical consultations and minor diagnostic and therapeutic procedures pose no great challenge from that perspective. However, health services embrace a large and expanding range of capital intensive and/or highly specialized procedures requiring massive and complex resources and begging for sophisticated management.

Today's hospitals provide to individual *patients* services that are requisitioned by *physicians* and paid for by *government*. The hospital managers' job in that complex situation is to avoid displeasing any of these three groups but there is no overriding objective, nothing that can be used as a hard bottom-line to monitor and appraise performance. Hospital administration probably has more to do with politics and public relations than with management in a strict sense. The resulting mess should come as no surprise.

Yet hospitals could be managed like any other complex and sophisticated operation if the following conditions could obtain:

- Buyers for the services that hospitals provide, that could match through their requirements for those services the technological sophistication of the hospitals themselves.

- Effective competition between buyers and sellers of hospital services.

The Canadian version of HMOs suggested as vehicles for managing access to all health services could certainly play the role of sophisticated buyers of specialized and expensive hospital services. For them to become buyers of these services requires the age and sex modulated capitation payments to include similarly modulated average costs of hospitalization. Since HMOs operate on behalf of their subscribers, an innovation of that sort would replace the three cornered environment (patients, physicians, government) of hospital managers with a client/supplier relationship of great simplicity. Hospital administration would involve less politics and more genuine management. The need for fiscal and regulatory restraints on hospitals would almost completely disappear. Hospital deregulation could be expected to lead to mergers, rationalization and specialization but, in any case, to greater efficiency.

Such a "market" solution to the control of hospital costs is the only one that has any chance of working. I know from personal experience and observation of others that government planning and control of hospital facilities is too blunt to be effective. It represents at best an attempt to allocate resources not on the basis of adjusting supply to demand as actually expressed but to a concept of optimum use without any means to get demand to converge on that optimum use; this sounds like – and is – an exercise in mutual frustration except when resources are plentiful, an increasingly rare occurrence.

How would HMOs pay for hospitals services? This, given that they would be discriminating buyers is not as important as it may seem and, certainly less important in the proposed system than when either government or insurance companies pay to the hospital bills. DRGs certainly suggest themselves as interesting candidates for funding purposes because, by making explicit the relationship between cost and utilization in a way that is directly related to the clinical choices made by physicians, it represents a system of accounting that is most appropriate when professional and financial responsibilities are placed in the same hands.

Would these deregulated hospitals, functioning in a market for specialized procedures and acute-care services, end up as private profit-making hospitals? Most probably not but that question is not very important. What governs the behaviour of institutions is determined much more by their environment than it is by their legal status. U.S. experience shows that legal status has little discernible impact on behaviour. Our Canadian hospitals would become more successful optimizers even while remaining what they have become: non-government, not-for-profit organizations.

Canadians are living on borrowed time as far as the organization of our health services are concerned. The threat does not consist of an imminent cost explosion: government controls in Canada have been strong enough to prevent that. What may be at risk is effectiveness and consumer satisfaction. Our system relies unduly on professional ethics that are not sustained by the economic and organizational environments and this creates a vacuum that is perceived by the public as well as the medical profession.

The most often suggested remedies such as user fees and privatization of hospitals would make no positive contribution to the restoration of incentives towards greater effectiveness and managerial efficiency. Those who proffer such suggestions are misled by false analogies between the health services industry and other industries.

A more promising approach, I believe, resides in strengthening the *health assurance* features of our national health programs by paying groups of physicians lump sums to be used to keep Canadians healthy. Canada has some experience in the organization of community health clinics whether in the Prairies under the co-operative movement's sponsorship, in Ontario in some outstanding experiments and in Quebec CLSCs. We must learn from the positive as well as the negative aspects of these experiments; these lessons include giving much greater recognition to the pivotal role of the medical profession and also shifting the community health centres from the periphery to the center of the system.

Our Canadian health system does not have to be transformed overnight. But it should be made flexible enough – which it is not at present – to allow those who want to experiment to do so freely and, in so doing, to develop an alternative form of health services delivery, learn from their mistakes but also demonstrate to doubters the contribution this other approach can make to greater effectiveness in our health service, more efficiency in services delivery and more satisfaction for providers and consumers.

Jacques Brunet

Introduction

Western countries have faced troublesome economic problems during the last five years – a recession followed by uneven economic recovery, budgetary deficits, and so on. These factors have prompted many countries to take a hard look at their expenditures, notably those allocated to social programs. In Quebec, as in other Canadian provinces (as well as in the United States with its partial payment programs such as Medicare and Medicaid), the health care system demands large and ever-increasing amounts of money.

The question is whether we are simply going through a difficult period, a transitory phase that will correct itself over the next few years, or whether these expenses will continue to mount in the future. Judging from the various indicators at our disposal, health expenditures will continue to rise for at least two or three decades to come.

Faced with this prospect, discussions can either be pessimistic or realistic. My own inclination is that it is only realistic to expect the demand for health services to grow, not only because of our aging population, but because of technological advances.

I will begin by outlining the present situation as I see it, and by examining the most promising approaches not only for reducing the resources allocated to maintaining health, but also for improving health care and for encouraging better use of our resources. We will look at the major factors influencing the demand for health care – aging and new therapeutic techniques. We then will briefly examine various options for modifying the system of health service delivery to the elderly and for improving their expectancy for a healthy life.

The Effects of an Aging Population

Demographic Data

Demographic data indicate that the 65-and-over age group is growing larger with every passing year; in

Quebec, this age group will account for more than one person in eight by the end of the century. What is astonishing is the projected increase in the number of people aged 85 and over – in 2001 this group will likely be almost three times as large as it was in 1981 (Table 9-1).

Longer life after the age of 65 is an important phenomenon and is the result of a number of factors, including: advances in medical research, better access to health care, better nutrition, better health education, and, above all, a significant improvement in the general standard of living in recent decades.

These developments represent a considerable challenge for health planners, as well as for managers of the various pension plans in the public and private sectors. It is no longer simply a question of being able to predict aging trends, but also to predict the life span of elderly people, who must be assured adequate health care and adequate retirement incomes.

What are the implications of an aging population? Clearly, greater demands will be placed on health services. Our projections must take into account this aspect of aging trends, particularly the increased number of seniors over the age of 85.

General Health Status of the Elderly

It is normal to assume that the later years of life will be marked by an increased number of afflictions related to aging. These are not so much new diseases as a greater number of chronic conditions related to aging, such as osteo-articulatory, cardiovascular, respiratory and metabolic illnesses.

Mental health problems are probably most often associated with aging. Vasavan states that five out of every 100 persons aged 65 and older suffer from Alzheimer's disease, and that this figure rises to 20 per cent in the over-80 age group.[1]

Hospitalization of Persons Aged 65 and Over

Seniors need hosptial services more often than other age groups. In 1983 in Quebec, the 65-and-over age group, which made up 9.2 per cent of the population, accounted for 17.94 per cent of hospital admissions and 34.90 per cent of short-term hospitalization (Charts 9-1 and 9-2). These figures do not include seniors suffering from chronic illnesses who were occupying a hospital bed on a short-term basis.

The projected rapid increase in those older than 80 can only push up these figures.

Advanced Technology and Treatment

Advanced technology can be considered responsible for much of the rise in health care costs. We will take a brief look at the role played by new equipment, then new treatments.

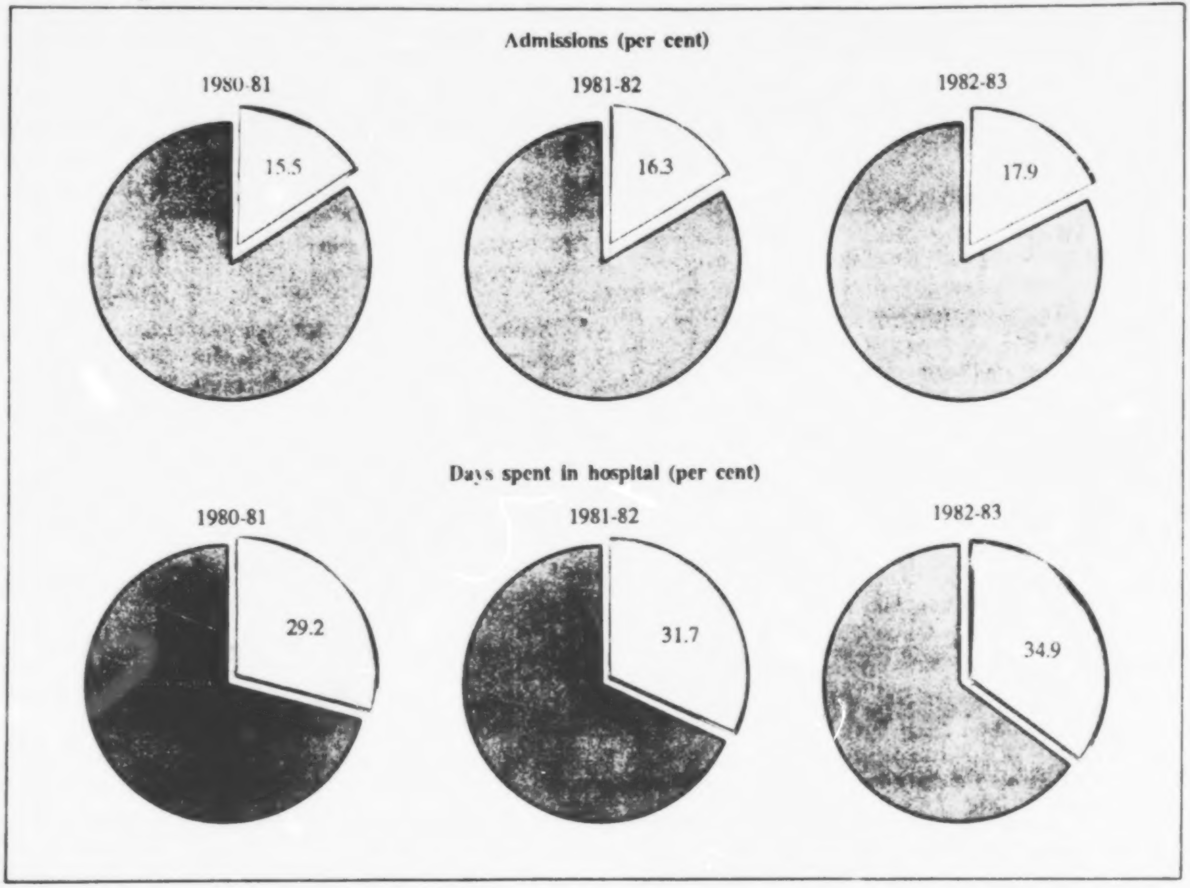
Table 9-1

Population of Quebec, 1981-2001

	1981	1986	1991	1996	2001	Growth factor 1981-2001
Age:						
65-74	369,995	407,108	457,201	501,972	511,289	1.38
75-84	162,240	198,348	234,947	263,416	301,156	1.86
85 and over	37,120	48,181	63,679	82,372	102,115	2.75
Population 65 and over	569,355	653,637	755,827	847,760	914,600	1.61
Total population	6,438,405	6,610,625	6,808,077	6,965,448	7,065,265	
Persons 65 and over as percentage of total population	8.84	9.89	11.1	12.17	12.95	

Chart 9-1

Persons Aged 65 and Over



Equipment

In the field of health care, the term "advanced technology" can be used to refer to a vast range of devices, from laboratory and radiology equipment such as medical scanners and radioisotopes to equipment used in operating rooms and intensive care units. Unprecedented progress has taken place in these areas over the last decade, allowing more precise diagnosis and the use of advanced treatment techniques. In the case of laboratory clinics, new machines have led to dramatic drops in the unit costs for virtually all laboratory tests. On the other hand, the number of tests performed has risen substantially. Cost reductions per test have been, in many cases, largely offset by increases in the number and variety of tests requested. The primary factor in the rising costs of laboratory clinics appears to be the average number of laboratory tests performed per person (Scitovsky and McCall 1975).

New Therapeutic Procedures

Increases in hospitalization costs, on the other hand, appear not to be so much related to advanced technology as to new therapeutic procedures.[2] The costs of some operations, such as coronary bypasses, transplants, and microsurgery, are very high. Many new treatments requiring delicate surgery are followed by relatively long periods in intensive care and prolonged convalescence in hospitals. This is particularly true of organ transplants. The outfitting of seniors with artificial limbs and orthopedic equipment should also be mentioned: for

Chart 9-2

General Population

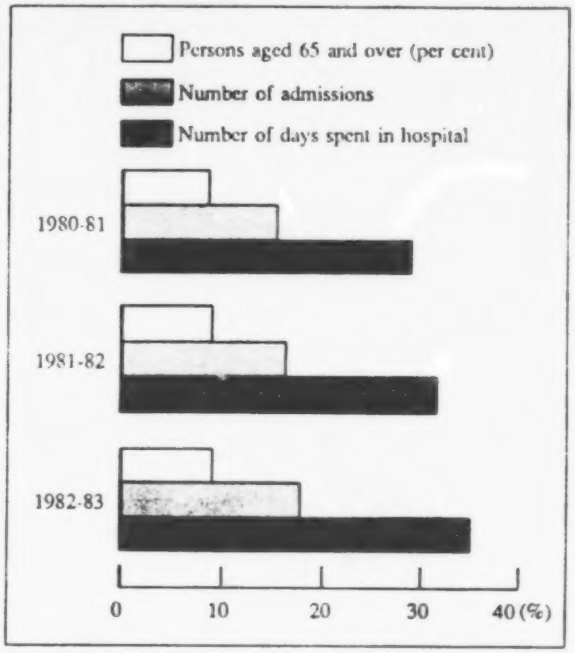
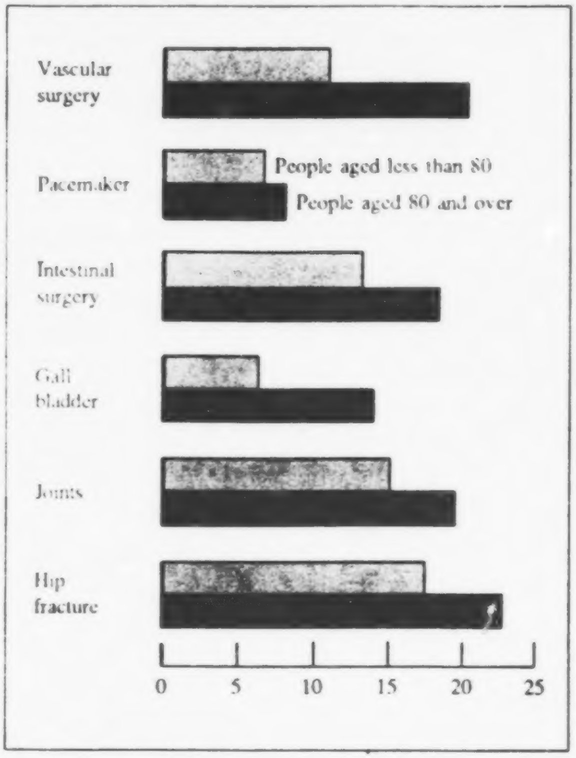


Chart 9-3

Median Number of Days in Hospital



example, hip joint replacements and the installation of artificial joints for arthritis victims.

Moreover, surgery appears to be more expensive for seniors (Hobler and Howlette 1985, pp. 339-41). For the very old, the periods of hospitalization following some common operations, such as hip joint replacements, are longer than for people under the age of 80. In some cases, these people must remain in hospital for one, two, or several extra days, either for medical reasons or because it is too difficult for them to return home or because of delays in their transfer to a home for the aged. These factors contribute to increased costs and must be taken into account (Chart 9-3).

Healthy Life Expectancy

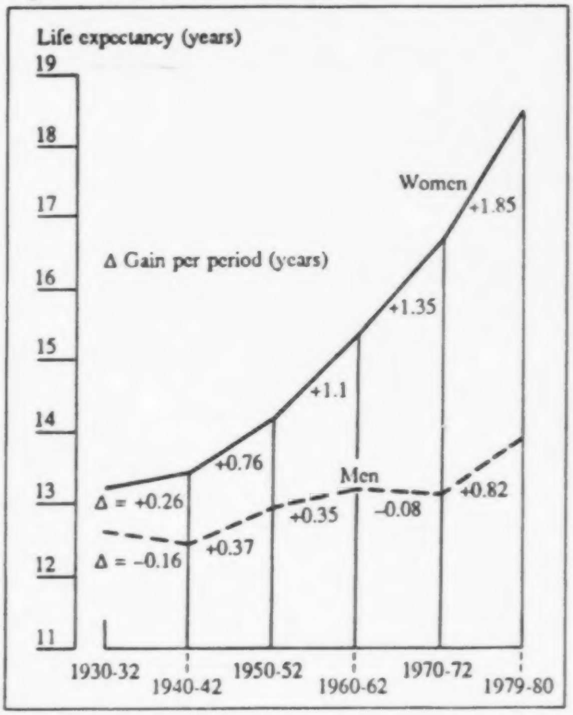
An aging population and technological developments have contributed to increased health care costs. Nevertheless, it is important not to lose sight of the general purpose of any health care system. In Quebec, considerable effort has been made to define health objectives, and a recent report entitled *Objectif: Santé* sums up recent developments (Conseil des affaires sociales et de la famille 1984). The report recommends that one major objective should be the improvement of healthy life expectancy. It was mentioned at the beginning of this paper that life expectancy in Canada as a whole, and Quebec in particular, is growing steadily; the same is not true of healthy life expectancy, however (Charts 9-4 and 9-5).

What does this mean? While it is true that life expectancy is growing steadily, Quebec's Conseil des affaires sociales et de la famille (CASF) had shown that the same cannot be said of healthy life expectancy (Dillard 1983).

It is surprising to realize that healthy life expectancy has remained virtually unchanged over the last few years. Longer life spans, often ending in difficult circumstances (handicaps or confinement to a nursing home), have led to sharp increases in additional expenses. We must learn to

Chart 9-4

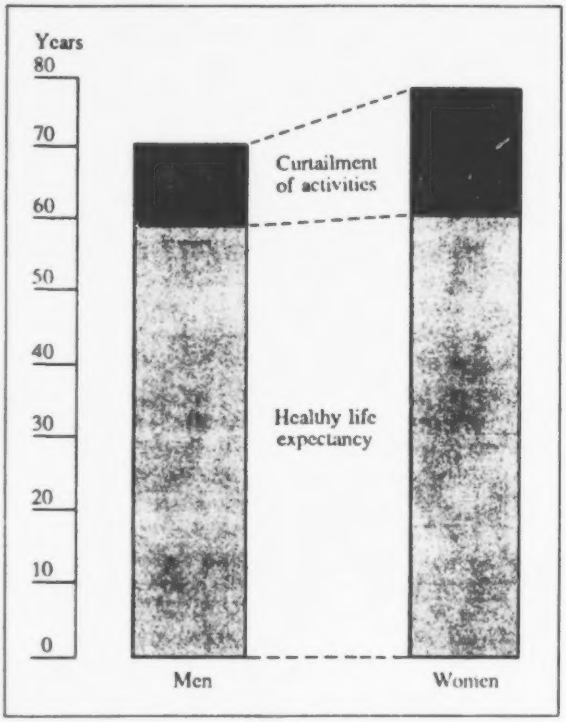
Life Expectancy Gains, Men and Women Aged 65, Quebec, 1930-80



SOURCE: Conseil des affaires sociales et de la famille, *Objectif Santé* (1984).

Chart 9-5

Total Life Expectancy and Healthy Life Expectancy at Birth, Men and Women, Quebec, 1980



cope with this situation, since there is little prospect of change in the near future. It is thus important to take another look at certain aspects of the health care services made available to the population in general and to the elderly in particular, since it will be the latter group that will be making greater and greater use of these services.

How can the situation faced by seniors be improved? As effort must be made to preserve the autonomy of seniors as long as possible and to adpat the system of health care delivery to their needs.

Better Nutrition

According to geriatric experts, a well-balanced diet is essential to good health in old age.

Seniors, who often spend much of their time alone, frequently lose interest in good nutrition. Health education and meals-on-wheels programs have been set up by certain organizations within the health system, such as local community service centres and volunteer groups. In many cases, eating right does not mean spending a lot of money on food, simply obtaining better food and preparing it properly.

Maintaining Physical and Intellectual Activity

In recent years, a new social phenomenon has appeared: people opting for retirement or pre-retirement at an increasingly early age. This trend stems from the prevailing economic conditions of the last few years, to technological developments, and so forth.

I feel that it is important for such retired people, who are in better and better physical and psychological condition, to be able to find jobs, whether full- or part-time, in volunteer or other organizations. Their experience and knowledge should be put to good use, not only for the good of society in general but, more importantly, to help preserve their physical and mental well-being. One of the primary causes of someone deteriorating is inactivity and a feeling that he or she is no longer useful to society, to their groups and to other people.

Despite considerable improvement in the situation over the last few years, many elderly people who could look after themselves quite well are lodged in public institutions or foster homes where they find little physical or intellectual stimulation. In Quebec, the policy of the Ministry of Social Affairs is to keep seniors on their own for as long as possible. Why are we not developing new ways and strategies to meet the needs of this segment of the population? Is it completely unrealistic to imagine accommodations where six to eight seniors who are still in good physical and mental condition for their age can live together? Each person would have a particular job to do, such as preparing meals, cleaning the house, etc. In this way a family-like atmosphere could be recreated and common interests developed. This approach, besides drastically reducing government costs, would give the people involved a sense of purpose and would greatly enrich their lives.

Adequate Services and Care for Chronic Conditions

Given that people are living longer and longer, it is normal that some suffer from various chronic illnesses for which adequate treatments already exist – conditions such as high blood pressure, diabetes and arthritis, among others. It is essential that adequate care is available to these people through outpatient clinics in order to stabilize their condition and above all to prevent further deterioration in the general state of their health. Quality of life for such people will be improved if provision is made for clinics specially designed for their age and their needs.

Treatment Tailored to the Elderly

For those diseases with a critical stage that requires hospitalization, there is much to be gained by providing services specially adapted to the needs of the elderly. The specialty of geriatrics was recently recognized by Quebec's Corporation professionnelle des médecins and by the Royal College of Canada, and the development of geriatric departments, geriatric services and/or units in hospitals must be encouraged. These geriatric units, besides providing seniors with services that correspond better to their needs, can offer rapid diagnoses and appropriate rehabilitation services, and often allow the patient to return to normal life instead of enduring a prolonged stay in hospital.

Support for the Elderly in Their Normal Environment

More and more people are living at home until a relatively advanced age. Research carried out by the Ministry of Social Affairs has shown that in many cases people prefer living at home, but are worried and nervous about being alone in case they need help. In fact, in many instances such people say they gain a feeling of security from knowing that they can obtain help in a hurry from relations, friends or other persons who are ready to help in case of trouble. Some intriguing experiments have been tried in Ontario whereby people whose elderly parents are still living with them have constructed temporary shelters for them outside the house but still on the property, or have remodelled to add separate living quarters inside the house. If such innovative efforts are coupled with adequate home care and day hospital services, senior citizens can face their future with greater confidence.

Extramural Hospitals

There have been experiments in France in recent years that have involved offering as complete an inventory of hospital services as possible in the home. This system allows people recovering from surgery or undergoing treatment for a specific condition to receive almost all the services at home that normally would be given in a hospital. The European experiments show that this type of approach can work. Identical experiments are currently being tried out in New Brunswick.

Recently, Quebec's Ministry of Health and Social Services approved a major grant to the Verdun Hospital for setting up an extramural unit in order to determine what services can be offered at home under such a system and whether it would be worthwhile.

Conclusion

Our aging population is a fact of life, and we cannot and must not retreat from its challenge. However, it is important to adapt the system gradually to meet the needs of this burgeoning age group.

The growing numbers of seniors, the multiplication of chronic illnesses and new treatments will all have a marked effect on hospital use and likely on the costs of running the system.

The financing of medical care and hospital services has changed very little in the last few years. We must find ways to encourage patients, doctors and administrators to make more rational use of services, both diagnostic and therapeutic. There is little incentive at the present time for consumers to restrain their demands on the system or for administrators to hold down costs.

As for doctors, the payment system presently in place encourages them to step up their activities and, in so doing, to increase the load on the health care system.

We must therefore seek innovative solutions in coming years to problems connected with the organization and financing of health services. Interesting experiments are currently underway in the United States, particularly in the area of hospital financing. According to a recent report written by Jack Owen (1985), Executive vice-president of the American Hospital Association, the results of DRGs (Diagnostic Related Groups) have been "dramatic." He points to increased productivity, fewer admissions, shorter stays and reduced personnel. Admissions for persons aged 65 and over dropped 2.4 per cent in 1984, compared to a rise of 6.7 per cent in 1983. For the first time the Medicaid and Medicare programs came in under budget at $40.6 billion instead of the projected $42 billion.

Some experts have sharply criticized this payment system, but its results cannot be ignored.

It is time for us to take a hard look at the financing and functioning of our health care system and to find a way to encourage effectiveness and efficiency among its main actors – patients, doctors and administrators.

Fraser Mustard

The presentations at this meeting and the background material prepared for it clearly outline the issues that are arising in relation to health care services in the face of the changing demography of our population and the patterns of illness. The key issue appears to be how to provide care in relation to the needs of an increased proportion of older people despite constrained resources.

Health and Health Care

In considering this problem, the intellectual context within which health is understood influences the approaches we make. The body of evidence is substantial that the primary determinants of the health status of populations reside in social, economic and cultural factors interacting with the basic biology of individuals which is largely determined by genetic factors. For example, mortality from tuberculosis decreased dramatically in association with the improvements in society provided by the Industrial Revolution, long before there was any effective medical therapy (McKeown 1976). The effects of social, cultural and economic factors begin early in life and probably have an important bearing on the health status of adults. For nearly every major human disease there is a clear correlation with income or social class. The lower the income or social class, the greater the risk of disease (Townsend and Davidson 1982). For major disease problems such as those associated with cardiovascular diseases and cancer, some of the underlying causes undoubtedly reside in choices that we as individuals make in terms of where we live and how we live. It is not surprising therefore that most of the gain in life expectancy which we have experienced in western countries, contributing to an increasingly older population, is a result of the changes in social, economic and cultural factors that influence our health status (McKeown 1976; Townsend and Davidson 1982).

As the health status of a population changes, so do the requirements for health care services. Over the years the pattern of health care services has had to adjust to the changing patterns of illness in society. The most classic example of this is the enormous change in the requirements for services for children as a consequence of the reduction in the incidence of infectious disease in children.

There are examples today of changes that are taking place in the incidence of chronic disorders. For example, the decline in the incidence of myocardial infarction in the United States (Pell and Fayerweather 1985) is unrelated to health care and if it continues over the next two decades, it will substantially reduce premature death from heart attacks and the need for coronary care units and cardiac surgery. This decline in the incidence of disorders that cause premature adult death, together with the changing demography of the population, provides a clear view of the daunting problem health care services will face in attempting to meet the needs of an aging population.

The Limitations of Health Care

The expectations for health care services should be realistically related to what they can do. For example, although health care can influence maternal and infant mortality, the major factor in prematurity and infant and maternal mortality is the health status of the mothers which is mainly determined by how and where they live (Townsend and Davidson 1982; Baird 1974). Salvaging premature children through neonatal units doesn't make much sense when the underlying social and economic factors that contribute to prematurity have not been addressed (Baird 1974). Health care has a minor role in primary prevention and has limited capacity to cure chronic disorders. However, it does play a key role in providing a range of services that help individuals cope with these problems. These services range from supportive care to organ transplants and the use of prosthetic devices in the repair of damaged joints. Because of the high cost and risks of this halfway technology (the phrase of Lewis Thomas 1974) it is becoming increasingly important that the technology be demonstrated to be effective in properly designed clinical trials before it gains widespread use Thirty years ago the concept of randomized clinical trials to assess the value of diagnostic and treatment procedures was not given much attention. Today it has penetrated into many medical schools, key clinical journals, and some professional bodies (Relman 1982). We still have a long way to go before this approach becomes an essential factor in assessing the suitability and quality of health care throughout the system.

For the foreseeable future the role of health care will be to provide support to people who are ill, including measures that can influence the quality of individuals' lives and help them function within the community without necessarily influencing their life expectancy. Health care services should be organized to meet these objectives by using effective interventions as efficiently as possible.

It is important to keep the limits of medicine in mind when establishing policies and arrangements for health care services. It is instructive to remember that we went into public funding of health care with the belief that health care was an important factor in determining the health status of populations. Beveridge (1942), in his arguments for National Health Services in the United Kingdom, indicated that he believed that removal of the financial barriers to access to health care would diminish the burden of illness and lead to less need for health care services. Nearly 40 years after the introduction of the National Health Service in the United Kingdom, we know that the inequalities in health still exist across social classes and the needs for health care have grown, not diminished (Townsend and Davidson 1982; Merrison 1979). Thus, in thinking about the future and what health care services can do in respect to an aging population, it is important to keep in mind "The Limits of Medicine" (Black 1984).

Aging and Health Care

Our knowledge of the aging process and the appropriate support for older individuals is still limited. However, it is clear that as we age there is a progressive linear decline in our organ systems which is not due to disease, although disease can influence the rate of decline (Fries 1984; Brody 1985). Also, the decline in the function of organ systems makes us susceptible to diseases of old age.

Since man has a finite life span estimated by Fries (1984) to be 85+8 years, but possibly longer (Brody 1985), it is clear that our expectations for health care for an older population can be predicated on providing supportive care to individuals who will have a range of continuing needs as they gradually lose the function of their organ systems. Morbidity due to illness could be compressed into the later years of life. During the final months of their lives, older individuals require continuing or intermittent care until "natural death." This is also true for individuals dying at a younger age. A critical question for society is how intensive the care should be when we are approaching the end of our life span. There is already evidence that we do not treat older individuals as intensively as we do younger individuals with similar problems.

The health care requirements of an older population will relate to the gradual decline in physiologic functions and the acute and chronic illness of old age. Although some have thought that morbidity may be compressed into the last years of life (Fries 1984), on the basis of present evidence, this does not appear to be likely (Brody 1985; Roos and Shapiro 1981). Those between 65 and 84 years of age use hospitals about three times as much as those between 25 and 64 years while those over 85 years of age use hospitals about five times as much. However, the majority of elderly individuals are infrequently hospitalized. It is a small group of the elderly (5 per cent) who use the most hospital days who are obviously of concern to health care planners.

Arrangements for Providing Health Care

At present we have arrangements for providing health care services that have their roots in the earlier part of this century. By publicly funding the providers of health care services under the existing arrangements we have "frozen" the system in its older configuration, making change difficult (Enthoven 1978, p. 650; Klein 1983) and almost always involving confrontations between providers of health care services and the government.

It is important to understand why public funding tends to freeze the system. First, any change in the system (for example, the roles of hospitals, the roles of health professionals, the methods for paying physicians, new initiatives in health care), causes some provider groups to be threatened. In a publicly funded system the Minister of Health then becomes the focal point of the reactions and usually supports the status quo to avoid public confrontation with one of the provider groups. This is a powerful constraint in the Canadian system where the government does not have, as it has in the United Kingdom, the authority to manage the system (Enthoven 1985; Stoddart and Lomas 1982). However, even the system in the United Kingdom is rigid and it remains to be seen what the new management approach can do (Enthoven 1985).

We have achieved broad equity in terms of access to health care services, but in return, we now have a system that has limited capability to be innovative at a time when innovation is important for developing new approaches for the provision of health care services. Our system in Canada has to be changed if we are to prevent Ministries of Health from being "lightning rods" that attract the forces that resist change and turn the Ministries into reactive bodies preparing for the next challenge. The Ministries of Health should be freed up to be true Ministries of Health rather than "defence ministries" for the Ministers of Health.

There is substantial debate as to how to free the health care systems to become more innovative and more efficient (Enthoven 1985; Stoddart and Lomas 1982; Day and Klein 1985). The options range from the management system that the National Health Care Services in the United Kingdom has moved into, to the competitive-for-profit institutional structures that have emerged in the United States. A key question is whether we have to give up some equity to achieve more flexibility for innovations. Perhaps we can introduce some measure that would allow us to maintain equity in terms of access to health care services, but allow for more flexibility with strong incentives for efficiency. The suggestions of Stoddart and his colleagues (Stoddart and Lomas 1982; Stoddart and Seldon 1984) are in my view important in this regard. The evidence is clear that it is the structure in which physicians are placed that will determine how successful these new approaches will be (Klein 1983; Enthoven 1985; Stoddart and Lomas 1982; Stoddart and Seldon 1984). If physicians cannot be placed in environments that have strong incentives for them to deliver effective health care efficiently we will make little progress.

Thus, an important question is, can we introduce a competitive structure into our health care systems that involves physicians and integrates primary, secondary and tertiary health care services, and maintain our present equity? Some think that the principles of the health maintenance organizations can be introduced into our publicly funded health care arrangements (Stoddart and Lomas 1982; Stoddart and Seldon 1984). If we could achieve the same cost reduction or increases in productivity with this approach as appears to be the case in the United States (Manning et al. 1984), it would have a sizable impact on our present and future health care costs. A feature of some of the health maintenance organizations is the community base of their health care services and the strong incentives for the health care providers (physicians, nurses, medical social workers, and others) to keep their patients functioning in their community. These are attributes that are desirable for a health care system that will be providing more and more of its services to an older population. However, health care services can only provide part of the service needs ot the elderly.

Caring for the Elderly

A major challenge for our societies with an increasing proportion of older individuals and change in family structures is to create arrangements to facilitate older people living and functioning to the maximum of their abilities in their community. The social, economic, and cultural environment in which older individuals are placed will have an important bearing on how well they maintain their overall health status. Since the support which has normally been provided for older citizens through younger generations supporting their parents or relatives, is less feasible in today's society with its scattered families, divorced parents, single parents and childless couples, there are and will be increasing problems in both housing the elderly and in providing non-professional support for them. It is the success with which we strengthen existing and, when appropriate, develop in conjunction with professional services, new non-professional support for the elderly in the community that will determine to a considerabe extent the demands on health care services by older citizens. Furthermore, tranferring an elderly individual who has been temporarily placed in a health care institution back into the community can be very difficult if there are no relatives or friends to provide support.

There appears to be at least three kinds of solutions we can adopt:

1. *The medicalization of care for the elderly* — This is probably not sustainable for both cultural and economic reasons. First, the kind of care and support the older individual needs is only intermittently within the medical framework. Second, the cost of providing the support for older individuals through health care programs is not sustainable. Thus, if we allow this to be the primary route for caring for older citizens, we will eventually be putting most of the old people in warehouses controlled by the "medical establishment." However, health care services must be an integral part of the service arrangements for the elderly. A key problem for most societies is to balance the role of health and social services in providing support for the elderly.

2. *Communities for the older citizens* — There have been developments in the United States, particularly in California, that create community housing complexes for senior citizens. These communities are set up with living areas that range from those for independent individuals, to those for fully dependent individuals, and finally, for those who are terminally ill. In some respects these arrangements are attractive in that they put the older people into a community of similar individuals and the non-medical and medical support services can be organized in relation to the particular needs of the individuals. These mini communities for the elderly can provide a wide range of recreational and educational program. Such communities can have their own health care system or can contract to have service provided by a provider group outside the community. These communities have a disadvantage in that they isolate the older members of society from the community as a whole and are probably only feasible for the more financially secure members of the population.

3. *Community-based living* — The goal behind this approach is to keep individuals living in their community and active within their society. This approach assumes that our society values the input and participation of individuals of all ages in its activities. To be successful, it requires a value structure in society that deems this to be an important goal and is prepared to support it. One key for success with this approach is the non-professional support base for the older citizen. The support can come from family, friends or others in the community. In addition to a personal support base there must be suitable accommodation, transportation arrangements and access to "tools for living." As we age we need specialized devices (such as eye glasses, hearing aids, walkers and specialized implements) to carry out everyday activities. These can be regarded as tools and should be developed to meet the diverse needs of an older population. They are, in effect, tools for living and should not become "medical devices."

Under these arrangements the non-medical support for older persons becomes the dominate part of the care structure. The family or friends are the advocates for the elderly individual in relation to their needs in the community and for the provision of health services. The health services should be organized to provide community-based medical care and work in association with social services and the non-professional support. The key to this approach is having friends or relatives able to provide support when needed.

As has been brought out at this meeting, there are a number of problems that have to be tackled if this approach is to be dominant. To be effective as an advocate for the needs of an older person, the advocate has to be well informed about the professional services that are available. For this reason some feel that the advocate should be a professional social worker. I feel it is better to develop the system so that the advocate is a close friend or relative. Most of this non-professional support for older citizens has been provided by women. Often they have to give up jobs and associated benefits to care for someone. When they themselves become part of the older group they may find themselves without an adequate financial base because of their earlier "sacrifice." The increasing participation of women in the work force will make them less available to provide the kind of support they provide for friends and relatives in the past. One solution is to increase the proportion of non-professional care through community service work in association with the decrease in hours of work that is taking place. It has been proposed that when elderly individuals reach the end of their life, relatives or friends should be given time off from their regular jobs (with pay) in order to allow the end of life to be as humane as possible. Many will think these approaches impractical, but in terms of the changes that are taking place in the social and economic character of our societies they may well be the best course for the future. In Sweden (Manning et al. 1984) they are giving these approaches serious consideration and believe that they are economically feasible. How we solve the non-medical support for older individuals in our society will have a major impact on how efficiently and effectively the health care system will be used by older individuals. The social structures or arrangements for supporting older individuals in the community are the most important questions for this conference. The health care questions are subsidiary and could, if we become mesmerized by the many issues in health care, cause us to lose sight of what has to be the major objective.

Technology, Social Change and Care

The revolution that is taking place in the world in terms of advanced technology and changes in society may allow us to reallocate human resources to create a humane and just society that includes our oldest citizens (Lagergren et al. 1984; Brainard and Madden 1985; Bell 1976). Furthermore, the technology that is being developed will have an important bearing not only on medical care, but also on the other kind of support services that are necessary for older people, including making it possible to create cheap, useful tools for older people ("tools for living"). It is important that the devices older people need to support themselves and their activities not be captured within a medical framework, but be left in the non-medical world. Thus, if we can develop the concept of "tools for living" for older people and use our imagination and initiative with the new technologies to develop the diverse forms that are necessary, we can go a long way to helping older citizens to maintain themselves in their communities.

Summary

In developing approaches for the care of elderly citizens within limited resources the following points can be made:

1. It will be necessary to develop the arrangements for the provision of non-professional care and professional care that take into account the changing social and economic characteristics of society;

2. The non-professional care arrangements at the community level in conjunction with social services will play a major if not the major part in determining how the elderly use the health care system;

3. The health care system, particularly physicians, should be placed under incentives to deliver effective health care efficiently;

4. The health care services should be assessed on how well they relate to the health status of the population they serve;

5. New approaches to health care policy and funding are necessary if (3) and (4) are to be achieved;

6. A decentralized system, that is competitive, with a diminished role for ministries of health is a potentially better route than a centrally managed system;

7. In adopting the approach in (6) it is important that the equity for users of the system not be lost when the system is freed to innovate and become efficient;

8. Because the changes are major it might be useful to develop pilot projects in different parts of Canada to study the most suitable approaches in our culture for new care arrangements for an aging population with limited health resources; and

9. National Health and Welfare, in collaboration with the appropriate provincial ministries concerned with health and social services, could establish policies and support to initiate these pilot projects.

Finally, as a result of the technological economic and cultural change we are going through, we must think through carefully the kind of decentralized society and the governing structures that may emerge in the future. There is little discussion of this at the present time in Canada, but it is clear that we are moving into a world in which institutional change with decentralization and strong local government at the community level may become an important option. These developments will have an important effect on our solutions to the needs of an aging population.

Floor Discussion

Question: *What are the future prospects for social care for the elderly in the province of Quebec, as compared with those for medical care?*

Answer: At the hospital level we see many of the elderly coming in for acute-care treatment, but sometimes they come in because of their social circumstances. In an attempt to meet their needs, either approach alone would be doomed to failure. The only solution is to get the medical people and the social service people together so that the elderly will receive the care they need. That is what we have been trying to do in Quebec, and in some places we have been very successful.

Question: *Does the present trend in the province of Ontario – namely, having physicians as administrators, not only in acute care (as in the case of the Sunnybrook Hospital) but also in long-term care (as in the new chronic-care hospital at Baycrest, where all six divisions are administered by physicians) – represent a "medicalization" of the health care system?*

Answer: Whether an administrator should be a physician is not the issue. The real issue is whether the administrator has an understanding of the aging process and of the needs that come with it, and whether he or she can organize services in support of those needs. Some physicians might be good at it; some individuals with a nursing background might be good at it; and some with a social-work background might be good at it.

Question: *How can the Canadian health care system adapt to our future needs regardless of market forces, payment mechanism, or decentralization to regional or district authorities?*

Answer: According to Claude Forget, the Canadian health care system is very inflexible; and Frazer Mustard's plea was for more experimentation. It is difficult to innovate, but that is not because the opposing forces are powerless; in fact, it is quite the opposite. Like a great push-ball suspended immobile between two teams of competing villagers, the control is suspended between two very powerful forces – one the medical profession and the other the government. And unfortunately each has control over something different. Governments have control over global health expenditures; the medical profession, over utilization decisions.

To change the system, the authority to make utilization decisions must be aligned with the responsibility to pay for them. That is the common feature of clinical budgeting and publicly financed competition. So it is very clear that, regardless of what position we take with respect to adapting the Canadian system to change, the principle of aligning utilization decisions with expenditure decisions must be followed.

One reason why we should explore publicly financed competition is simply that it may be the only avenue to explore. If, for example, governments refuse to get involved with the practice of medicine by looking into fee schedules and making them reflect ethics and effectiveness, or if they refuse to decentralize funding to district health councils, or whatever, they are severely limiting the options for change.

But even before experimentation, a couple of steps are necessary. First, we need to get a handle on the order of magnitude of potential savings. Next, we must decide whether financial incentives, surcharges, or rebates to consumers, which are needed if the system is to be changed, would be in violation of the Canada Health Act.

To think about the way ahead as either competition or regulation would be a disservice. No matter which route one takes, very strong elements of the other must also be involved. It is not a black-and-white situation.

Question: *Mr. Forget referred quite often in his presentation to the need for more entrepreneurial activity within our present health care system. I interpret that to be risk-taking activity for higher rewards, and I am wondering whether this is just a matter of semantics or whether there are risks that need to be taken in our health care system. Would he expand on that?*

Answer: Certainly entrepreneurial activity implies risk, but it involves risk in doing something, and the emphasis must really be on the thing that should be done. Within our present system there is no room for either. The system comes very close to a zero-sum game, where for every gain there is a loss and for every winner a loser; that can generate a lot of resisteance to change. There is need for innovative behaviour. A system ought to have two dimensions of flexibility: flexibility in terms of resource allocation; and flexibility as to the total expenditures. That should be the outcome of many dimensions, values, and preferences determined at different levels and not a sort of predetermined macro-economic expenditure total, where people are allowed to fight for their respective shares. If we did not have such a rigidly and effectively controlled system, probably more rather than fewer resources would be devoted to it. Should we, under a democratic system, deny that demand for added resources?

Question: *I am wondering if we could not do better with a more open profit-oriented system?*

Answer: Before we open up our health care system to privatization we should think again about our definition of equity. We seem to equate equity with uniformity, but there are other ways to define it. We could, for example, determine what level of service would be equitable but yet respect the freedom of those individuals who wish to devote more resources to their own health care. That way, a more flexible system could draw in more resources and even free some resources for people at the lower end of the income range. It could improve the quality of health care in general. So if one objective is the *same* care for all, that's one thing; if it is *better* care for all, that's a different thing.

Question: *Should vertical integration of hospitals take priority over horizontal integration?*

Answer: Mr. Brunet suggests, in his presentation, that vertical integration of hospitals is a desirable development. It could lead to "hospitals without walls" and allow for the more timely departure of the elderly from hospitals into Baycrest-type facilities. Advocates of vertical inegration would favour experimentation in that direction.

By contrast, someone sceptical of vertical integration would favour horizontal integration among major hospital facilities. Experimentation in that direction could be rationalized on the basis that, today, the competition for funds among high-tech hospitals is intense and destructive. Sister hospitals do not discuss such matters as CAT scanners, NMRs, and PETs. There are too many vested interests in vertical inegration today. It is an attempt to extend the dominance of the high-technology complex. More horizontal inegration among hospital facilities would be needed to make the health care dollar go further.

10 Closing Remarks

Judith Maxwell

In closing these proceedings, I would like to make a few comments about where we go from here.

First of all I think its important to emphasize that when the Economic Council of Canada sponsors a colloquium such as this one, we are attempting to achieve four different kinds of output. The first is to inform the Economic Council on the issues being addressed, so that the Council itself is better equippped to participate in public debate. In addition, the proceedings help the Council to set its own research agenda.

The second output is to bring together a group of people, such as yourselves, who represent many disciplines that are associated with health care. In fact, we hope that each of you has gained new insights and the stimulus to pursue some new ideas which will have long-term payoffs for Canada and for the health care system.

Third, we plan to publish the proceedings, which will disseminate the ideas expressed here to a much wider audience of people who are actively engaged in research in the health professions.

Fourth, we will be publishing a popularization of the papers in our Council magazine, Au Courant, which has a mailing list of about 40,000 people.

Before we close, I will try to summarize some of the main messages that I have received from this Colloquium. They will help to guide the inputs that the Council makes on questions associated with health care in our ongoing publications, in our interviews with the media, and in our participation in parliamentary and legislative hearings.

The Canadian health care system works well. We should be proud of it, but this is not a time to be complacent. It is clear that we will experience an increase in demand for health services from the elderly over the next few decades. This will occur in Canada later than it has in other countries. What is worrying is not the size of the commitment to health care, but the abrupt increase in the demands on the health care system. The system will be under pressure to adapt very quickly.

We also know that consumers will be more demanding, although it is difficult to predict at this stage what they will be seeking. Presumably they will be looking for more services than we now offer, they may also be looking for new delivery systems. Finally, we are concerned that current medical practice could lead to unnecessary increases in service intensity. This raises the issue of the incentives for cost-effectiveness in the system.

In the meantime, governments are under immense pressure to cut spending. There will be intense competition for resources. Competition within society generally, between spending on health care, on education, and on growth and job creation. More important perhaps, there will be competition within the health care system, for example, between formal and informal systems of care. Given that we face limited resources, we do not want the pressure on the system to result in arbitrary cuts in activity. Instead, we want to generate efficiency gains, and we want to have the freedom to increase the quality of service in certain key areas.

With that as background, it seems to me that there have been two main themes emerging in the discussion over the past two days. The two themes are incentives and integration.

First of all, incentives are not oriented in Canada toward cost control. But we have been given the strong message from international experts at this meeting that we should not simply imitate the experience of other countries. We should not simply transplant HMOs and DRGs. But we should look carefully at the lessons these experiments offer. The primary objective over the coming years has to be to make the system more flexible, to encourage experimentation in delivery systems and in types of care. We must also find incentives that encourage integration.

As far as integration is concerned, there are many issues. First of all it is clear that many solutions to the problems of the old generation lie in social services and personal services, not in medical services. We have to find a way of integrating health and social care for the elderly across this whole range. There was particular emphasis on the need to stress that individuals have a personal responsibility for their health status. Accordingly, we need to promote new lifestyles and new attitudes towards personal care.

We also need to break down barriers between the health and social service systems. This problem occurs at the ministerial level, between departments, as well as between professions and institutions. The gains to be made through integration are important ones not only in quality but also in cost-effectiveness. It seems to be that there will be a tendency for the health care system to build add-ons in order to attempt to integrate forward into social services and that add-ons of new services end up being a substitute for integration. This would lead to even greater inefficiency that now exists in the system.

The bottom line of the discussion is that we can see the demands from the needs of the elderly ahead of us. We have the time to plan and to adapt our system. It would be a disgrace if we allow the problem to become a crisis.

Appendixes

A Canadian Hospital Costs and Productivity

L. Auer

In a recently published study of the Economic Council of Canada, costs and productivity of the Canadian hospital sector are analyzed.

Over the past two decades hospital operating expenditures have increased tenfold, from $.7 billion in 1961 to $7 billion in 1979/80. The analysis shows how much of the cost increases has come from higher wages and prices, how much from more intensive hospital care, and what has happened to hospital productivity over the years. As well it shows how much hospital costs vary among the provinces, and what the underlying factors of the provincial variations are. Based on the findings the potential for improvement and cost reduction is explored.

The analysis is limited in scope. It is based on financial hospital statistics of the provinces and does not deal with all the major determinants of hospital costs. It does not examine, for example, the extent to which physicians affect the demand for hospital resources, the productivity performance and cost effectiveness. Nor does it analyse the incentive system that comes with the institutional structure and the financing of the hospital sector. Instead it concentrates on the utilization of hospital services, their costs and the potential for more efficient delivery of services.

The findings of the hospital cost and productivity analysis are briefly summarized below:

– From 1961 to 1980 Canada's hospital operating expenditures increased at an average annual rate of 15 per cent. About 1.5 percentage points of this growth could be attributed to *population growth*. The large remainder of 13.5 percentage points came from other cost factors (Chart A-1).

– Aside from population growth, two major factors made for changes in hospital expenditures: *hospital admission rates* and costs per hospital patient. The change in the age structure of Canada's population had a very small impact on hospital admission rates because most hospital admissions, at least three quarters of them, came from the younger age groups. And it was because the lower admission rates of younger women, associated with the sharp reduction in Canada's birth rate, more than compensated for the greater influx of elderly patients. The net effect of these demographic changes on hospital admissions was close to zero.

– Nearly 13 of the 15 per cent average annual increase, in hospital operating expenditures came from higher *costs per hospital patient*. Costs increased in all hospital departments. It is often thought that inpatient care is by far the largest cost item and that diagnostic services are a close second. That was not so. Administrative and supportive services contributed, on average, as much or more to the rise in costs than expenditures on inpatient care of the nursing department. And diagnostic and therapeutic services, together, contributed only about one-third as much as inpatient care.

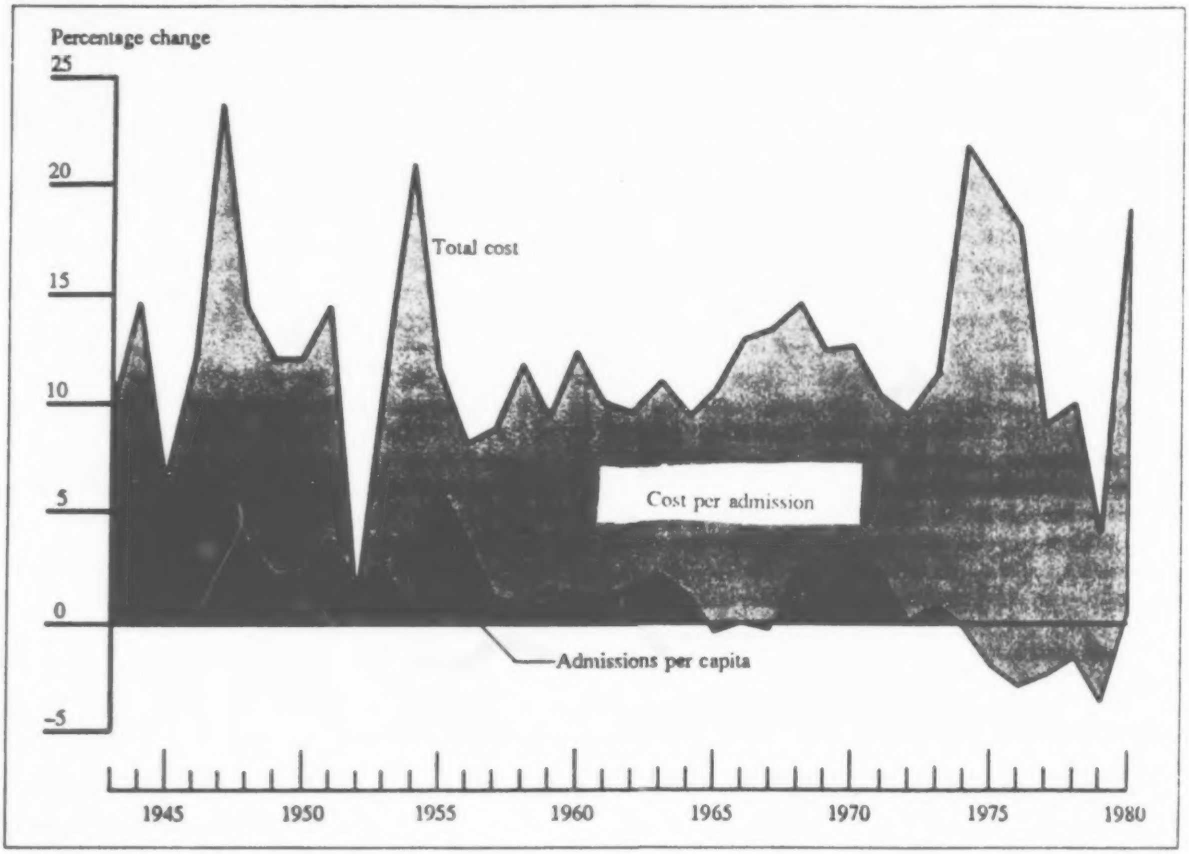
– Among the various cost factors, common to all hospital departments and services, *higher hospital wage rates accounted for about two-thirds of the overall rise in costs per patient, greater service intensity for one-quarter, and higher prices of hospital supplies for the remaining tenth* (Table A-1).

– By far the most pervasive factor in the rise of *hospital wage rates* was economy-wide wage and price inflation. It came with the accelerated growth of the North American economy during the 1960s, the stimulative monetary policies of the early 1970s, and the oil and resource price shocks of the mid- and late 1970s. Wage settlements in the hospital sector exceeded those of the rest of the economy but followed essentially the same cyclical pattern as other service industries and manufacturing. Also changes in the educational attainment of nurses and shifts in their employment status had an impact on hospital wage rates but it was not nearly as great as the economy-wide factors.

– As Canada's population grew at an annual rate of 1.5 per cent, it was to be expected that hospital services would increase at about the same rate; however, they increased, net of inflation, at an average annual rate of 5 per cent – much faster than expected. Most of this

Chart A-1

Sources of Rising Hospital Costs, per Capita, Canada, 1943-80



SOURCE Based on data from Statistics Canada.

increase resulted from greater *service intensity* per hospital patient. Considering the change in the age structure of Canada's population – and taking into account that elderly people, once admitted, do not recuperate as quickly – that is perhaps what we should have expected. Indeed, there is a growing concern today that health care for Canada's aging population will require more and more hospital services and pose a major problem to government financing in the future.

– Since the early 1960s the proportion of hospital bed-days, dedicated to elderly patients, increased from approximately 30 to 50 per cent. Hospitals managed to cope with this *age-conditioned increase in demand for hospital services* by reducing the length of hospital stays of the younger hospital patients. They were successful. They reduced the age-conditioned lengthening of hospital stays from 1.0 per cent per year to 0.4 per cent.

– At the same time, the intensity of hospital services increased. Service intensity per case or *case intensity*, increased in the diagnostic and therapeutic department, for example, as the number of radiological examinations and treatments increased from 133 units per patient during the early 1960s to 144 during the late 1970s. Case intensity did not increase in all hospital departments, however. Reflecting the nation-wide decline in birth rates the number of obstetrical suite visits, for example, diminished as a proportion of all hospital attendances from 15 to 9 per cent and the number of nursery days per 100 hospital patients declined from 100 to 57. Added over 23 different hospital services, the increase in case

Table A-1

Impact of Various Cost Elements on the Growth of Hospital Operating Expenditures, Canada, by Province, 1961-79/80

	Canada	Newfoundland	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
					(Per cent)						
Total operating expenditures	14.9	17.6	13.7	14.5	13.4	17.0	13.7	13.0	12.6	15.8	15.7
Population growth	1.6	1.3	0.9	0.8	0.9	1.1	1.9	0.6	0.2	2.7	2.8
Other factors[1]	0.6	0.5	0.4	0.7	0.7	0.8	0.6	0.7	0.3	0.6	0.5
Per capita expenditures	12.7	15.8	12.4	13.0	11.8	15.1	11.2	11.7	12.1	12.5	12.4
Aging of population	0.3	0.3	0.2	0.2	0.3	0.4	0.3	0.2	0.2	0.1	0.2
Age-specific factors	–0.6	1.8	1.6	0.6	–0.3	–1.2	–0.5	–0.8	0.0	–0.4	0.6
Other factors[2]	0.4	0.5	0.2	0.2	0.0	0.7	0.5	0.1	–0.1	–0.1	-1.1
Cost per hospital patient	12.6	13.2	10.4	12.0	11.8	15.2	10.9	12.2	12.0	12.9	12.7
Wage rates	8.2	6.9	7.4	7.9	7.9	8.7	8.3	8.2	7.7	8.4	8.4
Prices	1.1	1.7	1.4	1.5	1.3	0.8	1.0	1.1	1.2	1.2	0.9
Service intensity	3.3	4.6	1.6	2.6	2.6	5.7	1.6	2.9	3.1	3.3	3.3

[1] Included under this heading are the cost effects of outpatient expenditures, as well as part of the interaction terms of population growth and per capita expenditures.

[2] Other factors represent mainly interaction terms of admission rates per capita and cost per admission.

SOURCE Estimates based on data from Statistics Canada. Data refer to general and allied public hospitals and tuberculosis sanatoria only; they exclude mental hospitals and homes for special care.

intensity accounted for roughly one-third of the total rise in service intensity.

– The other two-thirds came from greater *task intensity*. Nursing hours per patient-day, for example, increased from 3 1/3 hours during the early 1960s to over 5 hours during the late 1970s. Over the same period of years nursing hours per surgical procedure increased from 9 hours to 11 1/2 hours, and nursing hours per delivery in the obstetrical suite from 11 to 21 hours.

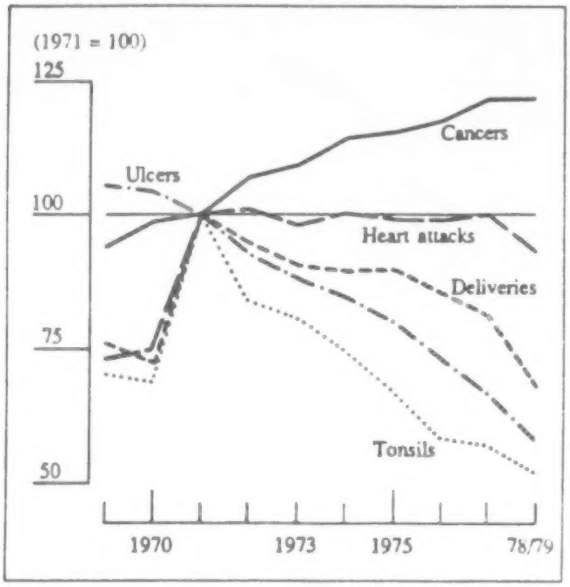
– To determine whether substantial shifts in *hospital case mix* added to service requirements, all hospital cases were assessed at the comparative cost of 46 diagnosis-related groups. Although trends among the various groups differed – for example, the rates of hospitalization for cancer treatment increased, while those for ulcers and tonsillectomies declined (Chart A-2) – changes in the case mix over the last decade did not add significantly to service requirements. It remains unknown, however, whether a further refinement of hospital case mix into, say, ten times as many diagnosis-related groups would have yielded very different results.

– In examining individual elements of the rise in hospital costs an unusual combination of case and task intensity appeared in estimates of the obstetrical suite and the baby nursery. In both case intensity declined and task intensity increased, one compensating for the other. The decline in case intensity could be readily explained since it was associated with the nation-wide decline in birth rates but the increase in task intensity was less obvious. Statistically it was associated with the increase in the *frequency of births by Caesarean section*. Over the past decade, for example, the rate of Caesareans increased from 5 per cent of all hospital deliveries in 1970 to over 15 per cent in 1980-81 (Chart A-3). In part this rising trend of Caesarean sections may have been due to more frequent birth complications as more women chose to postpone primary births and, in part, it may have been due to the new technology of fetal monitoring. The trend has become a matter of concern but as yet no consensus on optimal rates has emerged.

– As in other industries, the *estimation of hospital productivity* hinges on a comparison of output with resource inputs: the greater the output in response to additional resource inputs, the better the productivity

Chart A-2

Trends in Hospitalization for Selected Causes, Canada, 1969-78/79



SOURCE: Based on data from Statistics Canada

performance. Ideally, hospital output should be evaluated on the basis of improvement in the health status of hospital patients. Since that is impossible, we considered substitute measures of health status, such as life expectancy and health expectancy. We found these to be neither sufficiently refined nor sensitive enough to capture quantitatively the response to variations in hospital services over the years or among provinces. Hospital output was approximated, therefore, by the volume of hospital services as measured by the number of hospital patients, adjusted for surgical day-care visits and other outpatient services.

– *Hospital output*, so measured, increased over the last two decades from 2.8 million inpatient equivalents in 1961 to 4.0 million in 1979-80, or by approximately 40 per cent. Over the same time period Canada's population grew from 18.2 to 23.9 million or by about 30 per cent. While Canada's population grew at a fairly steady rate, the volume of hospital patients expanded rapidly during the 1960s and then slowed down during the 1970s.

– The proportion of *outpatient services* as part of all services provided by public general and allied special hospitals, roughly tripled from 4 to 12 per cent of the volume of hospital services. Among the various services provided for outpatients, surgical day-care visits have grown over the years as more patients, who might have been hospitalized for "light surgery" in earlier years, were now treated and released on the same day. These low-intensity cases of surgical day care were included with all other inpatients, as their exclusion would have understated the service volume provided by hospitals. The addition of day-surgery and outpatient services to inpatient admissions, raised the growth rate of the volume of hospital services from 2.1 to 3.0 per cent per year.

– *Hospital resources*, i.e., the inputs of labour, capital, fuel, and materials, increased at an average annual rate of 5.3 per cent and more than doubled over the same period. Labour inputs, for example, increased from 320 to 656 million hours and capital stock from $2.2 to $4.8 billion.

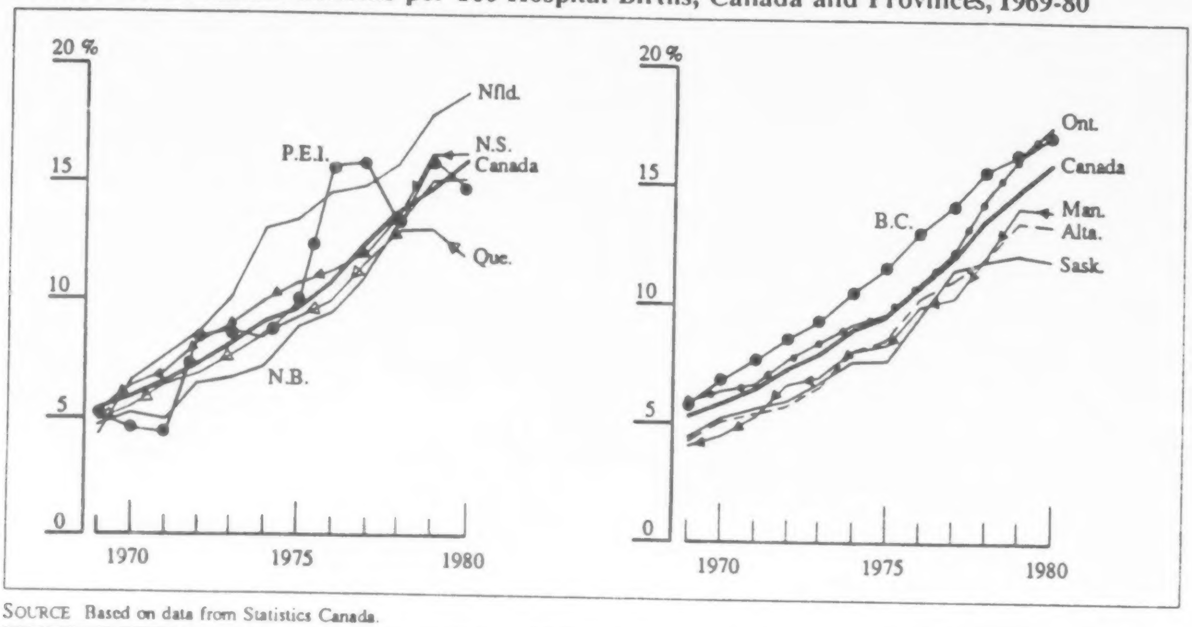
– *A measure of productivity performance* can be derived by comparing hospital output to inputs. Changes in factor productivity can be estimated by the difference in growth rates of the two. Based on a growth rate of 3.0 per cent per year for the volume of patients and 5.3 per cent for resource inputs – it yielded a negative growth rate of 2.3 per cent per year. By this measure, hospital productivity did not advance but decline over the years.

– Historically new industrial technology brought improvements in productivity. The same applied to *medical technology*. The antibiotics of the 1940s and 1950s reduced infectious disease and shortened hospital stays. But during the 1960s and 1970s new and very costly treatments appeared – renal dialysis, kidney transplants, open heart surgery – and with them came more intensive care. It involved more of everything: more laboratory tests and examinations, more equipment, more space, and most of all, more nursing time.

– Given our limited information, it is impossible to determine whether the increase in hospital services over the last two decades yielded commensurate benefits. It was possible, however, to show how much of *the change in factor productivity* could be attributed to the growth in service intensity of hospitals. Case intensity increased over the years at a rate of 0.9 per cent and was to some extent linked with changes in length of hospital stays. When it was assumed that all changes in case intensity yielded commensurate benefits to patients, it lowered the estimated rate of productivity decline from –2.3 to –1.4 per cent per year. And when further allowance was made for greater task intensity, productivity actually increased by 0.9 per cent per year. From an economic

Chart A-3

Number of Caesarean Sections per 100 Hospital Births, Canada and Provinces, 1969-80



SOURCE Based on data from Statistics Canada.

point of view, however, this approach to productivity analysis is debatable. To assume that greater service intensity is automatically matched by a correspondingly greater hospital output, is to assume away the fundamental productivity problem.

– Nevertheless this kind of analysis permits us to conclude that *hospital productivity* improved over the last two decades if, and only if, all of the greater service intensity, be it per hospital case or per hospital task, yielded commensurate benefits to patients. If the benefits, however, were not quite as large and amounted to less than two-thirds of the growth in service intensity, hospital productivity declined.

– Provincially the growth of hospital expenditures was conditioned by *demographic factors*. Canada's population grew over the last two decades at an average annual rate of 1.5 per cent. The population of British Columbia and Alberta grew at nearly twice that rate and added proportionately more to the growth in health expenditures.

– The *growth in costs per patient* varied among the provinces from 10 to 15 per cent per year. Again these provincial variations had little to do with the aging of the population. They came from other factors that often ran counter to the demographic trends.

– The provincial growth of *task intensity* varied; Ontario with a cost contribution of 1.7 per cent per year was on the low side and Newfoundland [illegible] per cent on the high side. In part this could be attributed to the fact that Newfoundland started out from much lower levels of service than Ontario and, as it intensified its services, Newfoundland came closer to the national average.

– *Levels of hospital operating expenditures* varied among the provinces as much as 40 per cent. Very little of this variation came from provincial differences in the provision of outpatient services, nearly all of it was attributable to inpatient services.

– *Levels of inpatient expenditures* were determined by provincial variations in hospital admission rates and costs per hospital patient. The contribution of admission rates ranged from 25 per cent below the national average in Quebec to about 25 per cent above average in Satskatchewan. This was not explained by demographic characteristics. Even after full allowance was made for the needs of different age groups, most of the provincial variations remained.

– *Provincial variations of wage rates* of hospital staff contributed to variations in costs per patient. Lower wage rates reduced the cost per patient in the Atlantic region and the Prairie provinces, higher wage rates added to costs in Quebec, Ontario, and British Columbia. In most provinces wage rates reinforced the overall cost variations.

– *Service intensity* contributed more than wage rates to provincial variations of costs per patient. Its contribution to costs ranged from –35 percentage points of Prince Edward Island to +25 percentage points of Quebec.

– There was a considerable *flexibility of adjustment* to the provincial demands for hospital services. Whereas hospital admission rates varied among the provinces because of higher or lower admission rates of the younger age groups, the length of hospital stays varied mainly because of longer or shorter stays of the elderly.

– Provincially the *levels of task intensity* varied by 20 per cent, and most of this variation came from differences in labour intensity. In the provinces of the Atlantic region and the Prairie region, labour intensity increased relative to the Canadian average over the years, and in the province of Quebec it diminished.

– *Provincial levels of hospital productivity* – measured by the number of hospital patients per personnel year (with full allowance for outpatient visits to the surgical suite, and an allowance for diagnostic, therapeutic and other outpatient services) – varied from a low of 12 patients per personnel year in Quebec to a high of 21 in Prince Edward Island. When based on both, case and task intensity, essentially the opposite pattern of variations emerged. Thus Quebec's hospital productivity was low when measured by number of patients and high when based on volume of service.

– *Hospital resources* contributed very little to provincial variations in hospital output per worker. That was mainly because resources per worker were not very large. In recent years capital stock per hospital personnel, for example, varied among the provinces by as much as 60 per cent but it averaged less than $20,000 per worker, and was only about one-third as large as in the rest of the economy.

– The empirical evidence of this analysis leads to the conclusion that greater service intensity in hospital treatment added, aside from economy-wide wage and price inflation, in a major way to the rise in hospital expenditures. It added 3 percentage points per year and accounted for one fifth of the rise in hospital expenditures over the past two decades. By comparison population growth added 1.5 per cent per year. When the various cost factors were split into two groups the ***economy-wide factors***, for example, population growth and general inflation, accounted for 8 percentage points of the 15 per cent growth in costs and *hospital-specific factors*, for example, admissions per capita, service intensity, and hospital-specific inflation, accounted for the other 7 percentage points.

– And it leads to the conclusion that *productivity of hospitals* has not improved over the years regardless of whether hospital output was measured by the number of hospital patients or the case volume of hospital services. In either case it declined. Only when it was assumed that all changes in service intensity – as measured by case and task intensity – were matched by commensurate benefits, the factor productivity of hospitals improved at an annual rate of 0.9 per cent. If hospital costs are to be contained in future, the productivity of hospitals needs to be improved by providing incentives for greater efficiency.

– Attempts are being made, especially in the United States, to *change the system*. In both Canada and the United States, the health insurance system has paid the costs whatever they might be: the more it cost, the more the system paid. Although global budgeting and government-imposed restraints kept outlays in Canada from rising as fast as in the United States, neither the Canadian nor the U.S. reimbursement corrected for the wrong incentive signals.

– New patient-oriented accounting systems and payment schedules based on *diagnosis related groups* (DRGs) are currently being introduced in the United States and seriously considered in some parts of Canada. Based on 467 DRGs and average treatment costs of each, for example, a hip joint replacement at $5,000, hospitals would be paid that amount. If the actual cost were less, the hospital could keep the difference; if it were more, it would have a loss.

– *Other patient-oriented accounting systems* are not based on reimbursement for hospital treatment but on annual prepayment of health care cost per year. Whereas the DRG system is aimed at keeping the hospital cost per admission down, the prepaid care system is aimed at keeping the annual health care cost per member of the group down. The simplest and most common of the prepaid health care systems are the Health Care Maintenance Organizations (HMOs). Others are Preferred Provider Organizations (PPOs in the United States), Community Health Centres (CHCs in Canada), and prepaid services provided by hospital chains to group members. Improved accounting procedures based on

DRGs could provide better information on hospital operating expenditures but will not necessarily make the system more efficient.

– It is concluded that there is an urgent need for *cost/benefit evaluation* of surgical interventions and alternative hospital treatments. Although conceptually the procedural steps of cost/benefit analysis are well established, the inherent complexities and uncertainties make it impossible to weigh all conceivable consequences. Simplistic as it may be, initially the potential benefit of hospital treatment could be quantified by the potential years of human life gained. Next, other decision criteria could be added.

– And it is concluded that new *labour-saving technology* needs to be developed. Judging by trends in hospital equipment prices and wage rates, investment in labour-saving technology should have been advantageous for most of the past two decades and well into the future. At present, major funding is provided by the federal government in support of health protection through disease and drug control, food research and standards, the evaluation of pharmaceuticals, and inspection controls. Yet no funding is directed at the development and adoption of new labour-saving technology for institutional care. The process could be accelerated if funds were made available by government and private enterprise for development and/or adoption of new labour-saving technology and if incentive payments were made to hospitals for experimental trial runs.

B Some Statistical Background Material

L. Auer

International Comparisons

The rise of health expenditures has become a topic of growing concern at international meetings. During the 1960s many analysts expected health expenditures would absorb no more than one additional percentage point of Gross Domestic Product (GDP) per decade. As it turned out expenditures advanced more rapidly and absorbed one and a half percentage points per decade. Whereas in 1960 the major industrialized countries spent 4.2 per cent of their GDP on health care, by 1982 they devoted 7.6 per cent (Chart B-1).

Over the years public funding of health care programs expanded and many countries established universal access to health care as a fundamental right. Governments redistributed the revenues from strong economic growth not only to the poor but to the broad majority. They improved the quality of health services and widened the range of benefits. As a result the share of public expenditures increased as part of all health expenditures (Chart B-2).

Higher tax revenues made more extensive public funding of health care possible during the 1960s and early 1970s and that, in turn, diminished the need for further expansion of health care programs in later years. As well the oil price shock and recession of 1974/75 and the oil crisis of 1978, with its more prolonged recession from 1979 to 1982 lowered tax revenues. Governments were reluctant to increase taxes at a time of stagnating economic growth and there was widespread concern that a further expansion of the public sector would come at the expense of the private sector, cut into productive capacity, lower productivity, and hamper economic growth. From 1975 onwards all countries trimmed (read) public health expenditures; both the more socialized countries, for example, the Netherlands, Sweden and the United Kingdom, as well as the more privatized, for example, the United States and Austria (Chart B-3).

It is now widely recognized that the rise in health expenditures of the industrialized countries stems from three major factors: higher per capita incomes, more government involvement, and new medical technology. Economic growth makes for greater incomes, raises expectations, and increases the demand for health services. As well, government funding of health services contributes to expenditure growth when new programs are introduced. It may also allow for tighter control. Compared to other countries, for example, Canada's public expenditure share ranked high during the late 1960s and early 1970s. In later years, however, Canada managed to keep its health expenditures as a share of GDP below that of other countries such as, the Netherlands and the United States (Chart B-2).

In much of the health care field – with the notable exception of pharmaceuticals – new technology was labour-using rather than labour-saving. Medical science achieved much over the last 20 years, but most of this advance required more capital resources without any offsetting reduction in labour inputs.

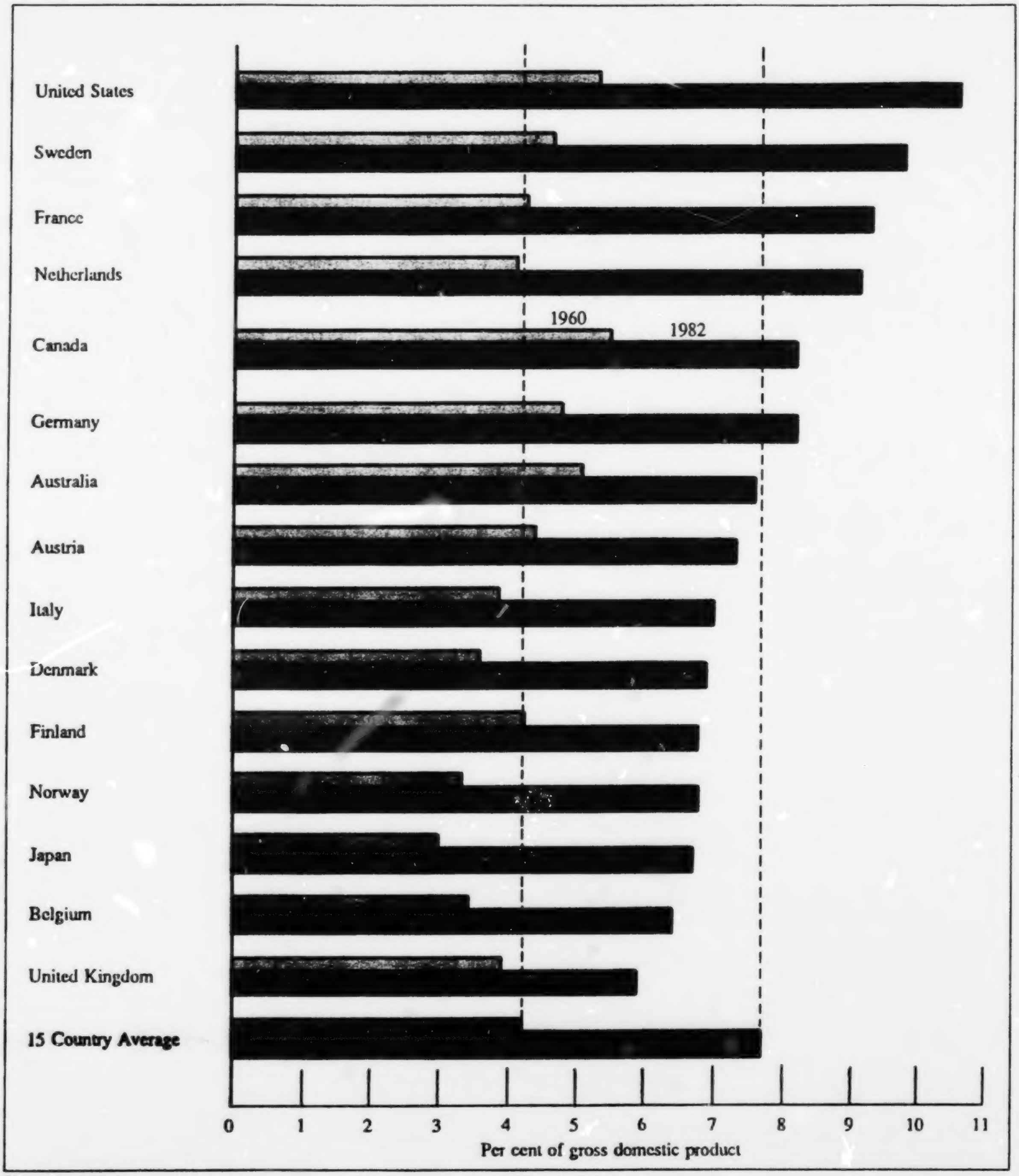
The closing of the gap between medical knowledge and financial arrangements has failed to yield the enormous benefits anticipated earlier. Life expectancy, one of the major indicators of health status and a measure of the output of health services, did not increase in proportion with the volume and quality of services. Additional health expenditures yielded diminishing returns. Since the 1920s the gains in life expectancy gradually levelled off and – irrespective of the type of financing, intensity of service, or health expenditures per capita – international trends converged towards a life expectancy of 75 to 80 years (Chart B-4).

Demographic Developments

Over the past four decades Canada's population roughly doubled, from 12.3 million in 1946 to 25.6 million people in 1986. Over the next four decades it is expected to grow at a much slower rate (Statistics Canada 1985). Under a slow-growth scenario with a low fertility rate (1.7 children per woman) and an immigration of 100,000 annually, it would slowly expand, reach a maximum size

Chart B-1

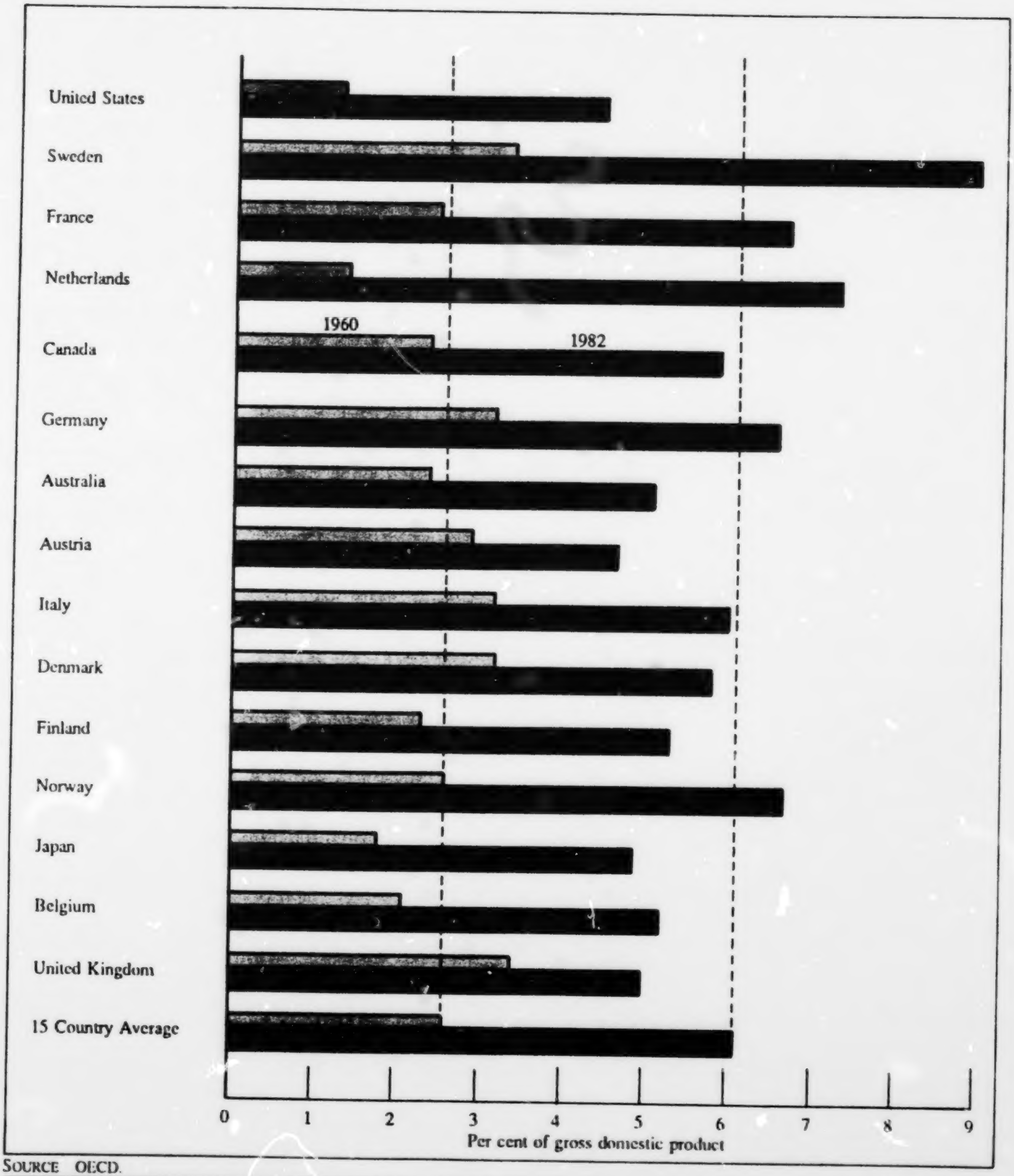
Health Care Expenditures as a Proportion of Gross Domestic Product, Selected Countries, 1960 and 1982



SOURCE OECD.

Chart B-2

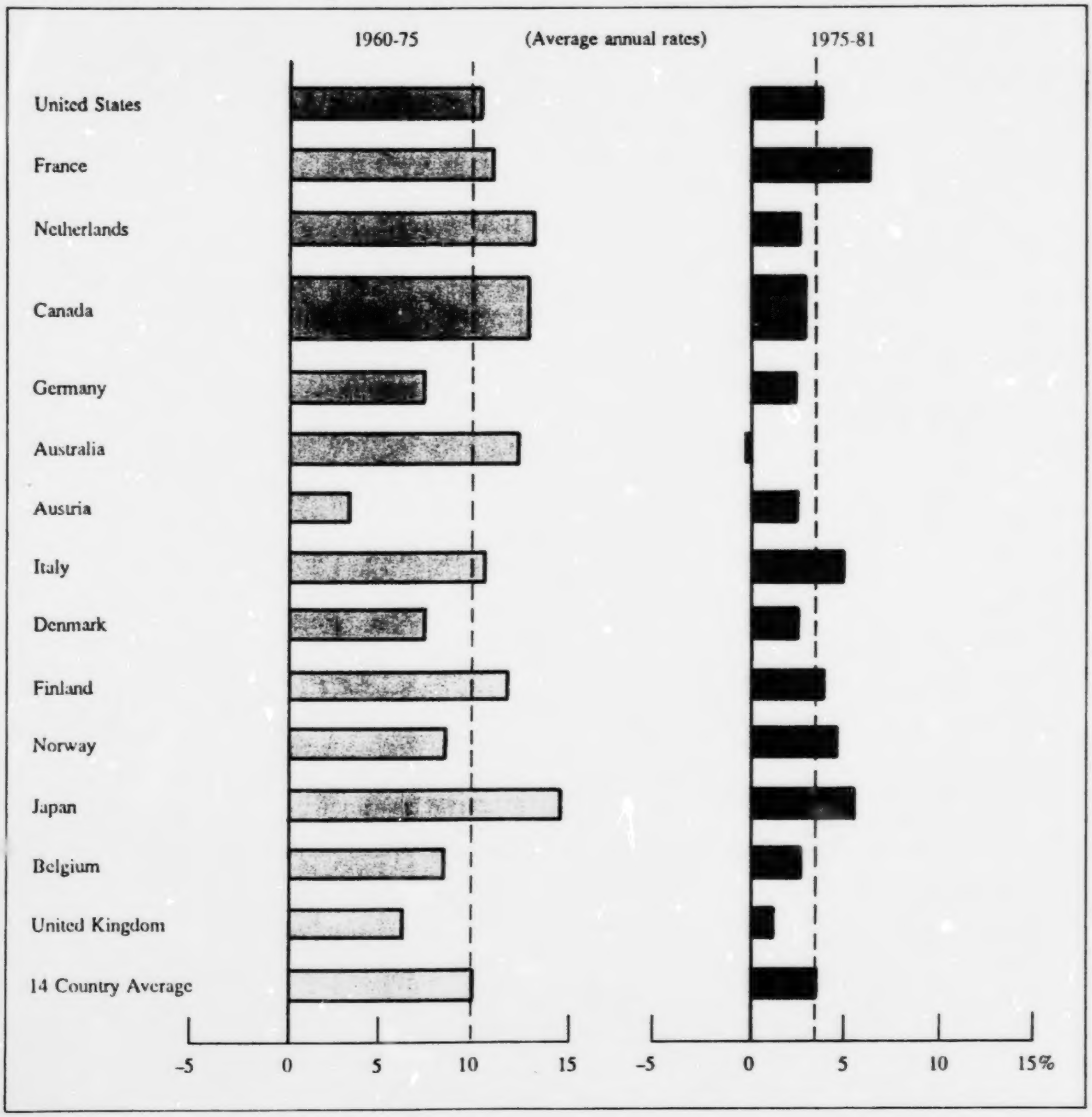
Public Health Expenditures as a Proportion of Gross Domestic Product, Selected Countries, 1960 and 1982



SOURCE OECD.

Chart B-3

Growth of Public Health Expenditures, Selected Countries, 1960-75 and 1975-81

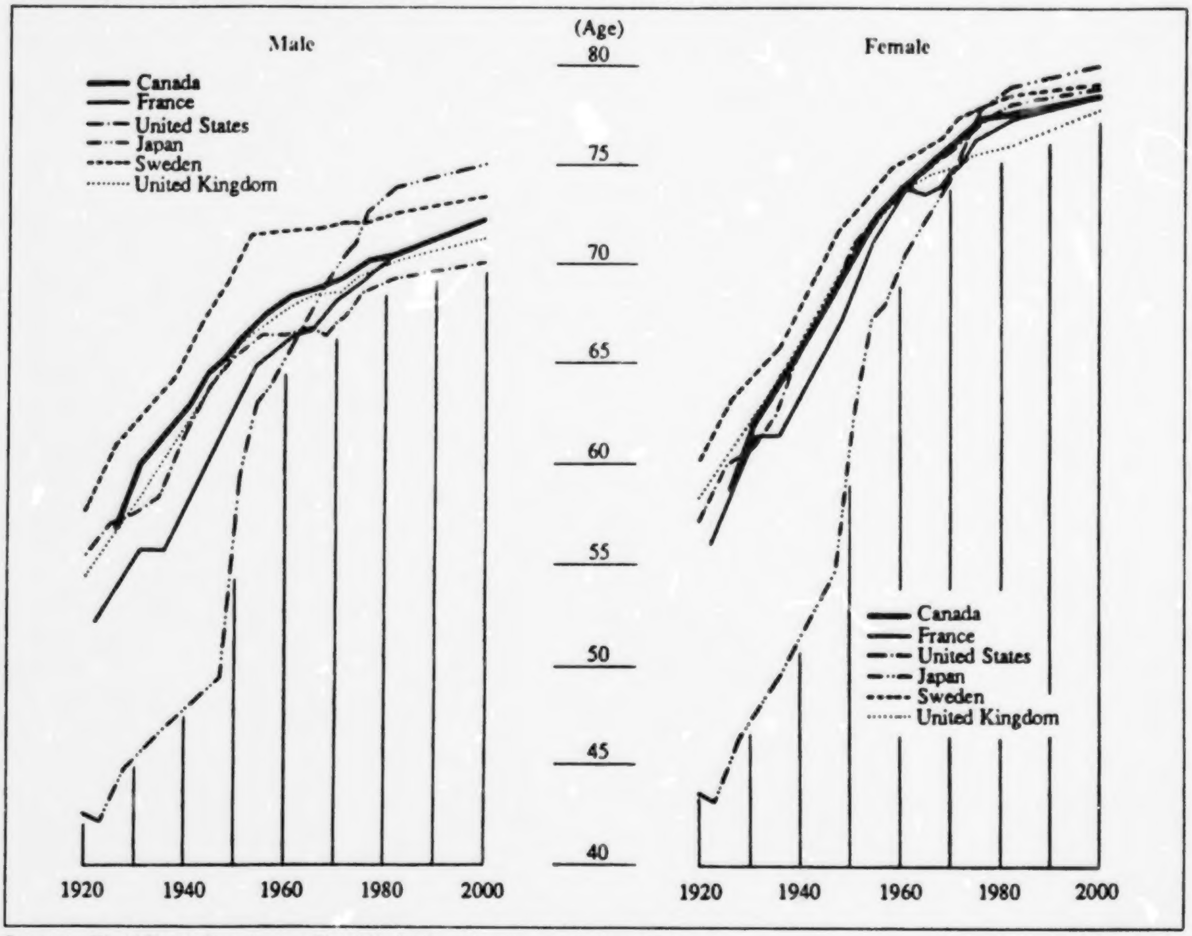


SOURCE: OECD.

of 28 million by the year 2006, stagnate and then diminish to 27.5 million by 2026. Under a fast-growth scenario, with a high fertility rate (2.2 children per woman) and an immigration of 150,000 annually, it would reach 32 million in 2006 and continue to expand to nearly 37 million by 2026. But even at that higher projection, Canada's population would grow in future at not quite half the rate of the past (Chart B-5).

Chart B-4

Life Expectancy at Birth, Selected Industrial Countries, 1920-2000



SOURCE: World Health Organization, *World Health Statistics* (Geneva: WHO, 1983).

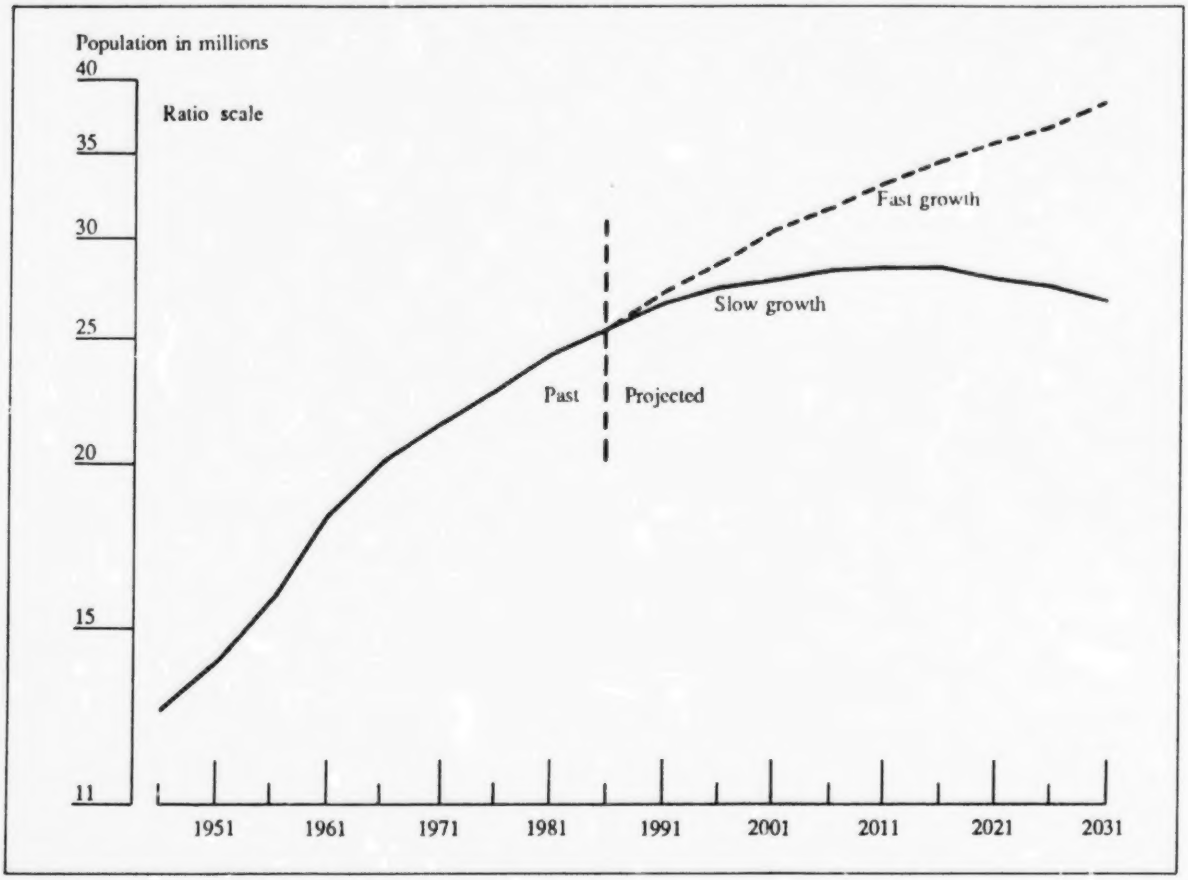
Aging of the Population

The aging trend in Canada's population started about two decades ago when the baby boom ended. That shows up clearly in the shrinking base of Canada's population pyramid, with the numbers of preschoolers and elementary school students falling below the two million mark for the first time in 1981 (Chart B-6).

While fertility rates impact on the size of the younger age groups from 0-17 years, they do not affect that of the older groups, of 65 years and over. For the projection period to 2026, their numbers will be governed solely by variations in immigration and life expectancy. At present the older population stands at about 2.5 million, it will more than double by the year 2026. Under either slow or fast population growth, some 6 million Canadians will have reached retirement age (65 years and over) four decades from now, a phenomenon that is widely perceived as one of the major challenges of the next century. Not only will their numbers double but they will live longer. At present, the oldest of the elderly, 75 years and over, account for not quite 40 per cent of the elderly, by the year 2026 they will account for nearly 70 per cent.

Chart B-5

Population, Past and Projected, Canada, 1946-2031



SOURCE: Based on data from Statistics Canada.

Dependency Ratios

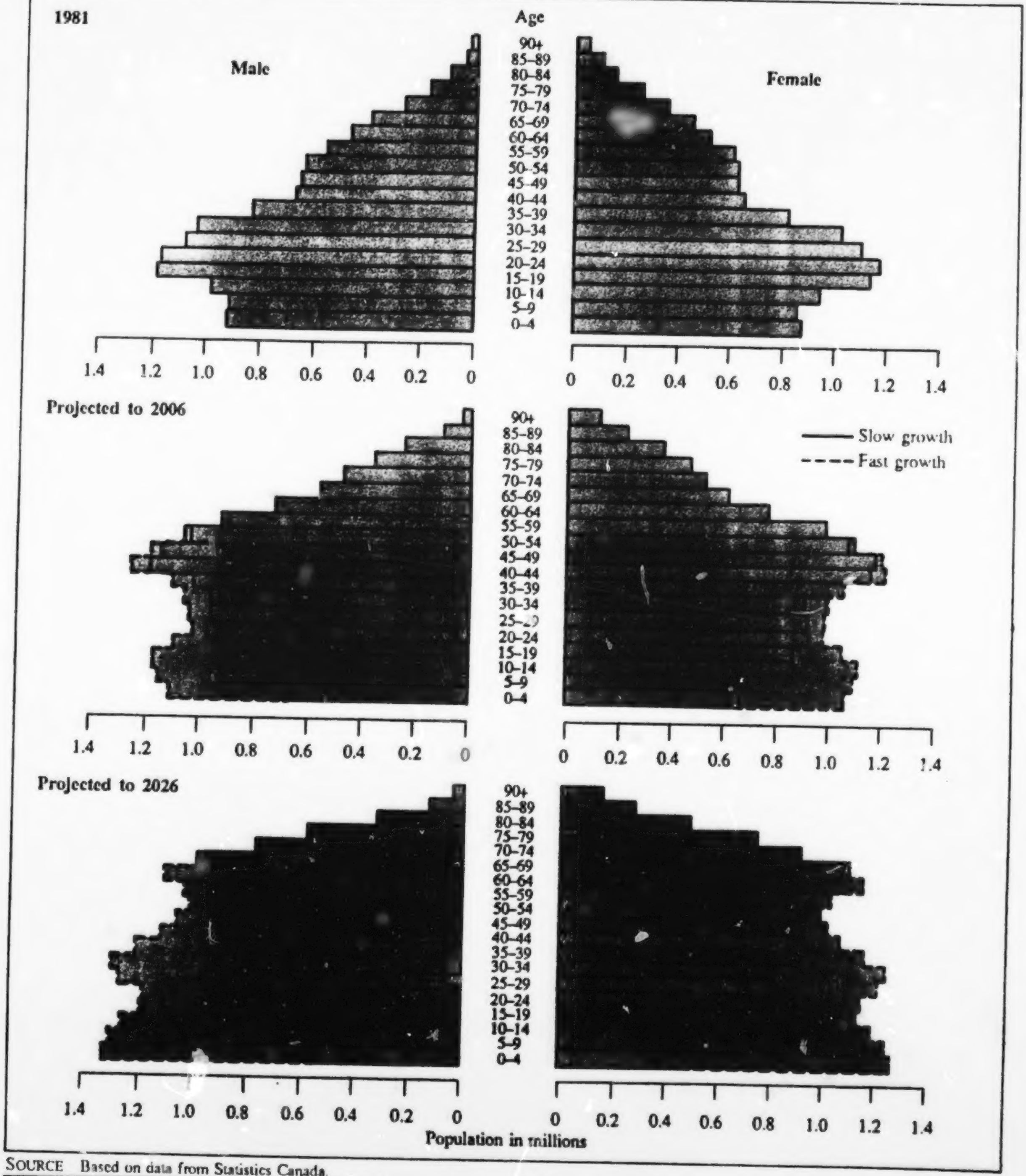
The changing proportions of the younger and older age groups are usually captured in one single measure: the dependency ratio. It combines the young and the old, and compares that total to the size of the working age population (age 18-64). This gives an indication of the number of dependents that must be "carried" by each member of the working age of the population. At present the dependency ratio stands at 57, that is to say 100 persons of the working age population carry, on average, 57 persons of the younger and older age groups.

Historically the dependency ratios diminished from 90 around 1850 to below 60 during the 1930s, rose during the years of the baby boom to reach a high of 70 in 1961, and are now on the decline again (Foot 1982). If rates of birth and immigration remain low, the dependency ratios will drop as low as 50 by the year 2010. If the rates rise, the dependency ratios will stabilize near 60 for the next two or three decades. In either case, they won't change much until after the turn of the next century when the baby boomers of the 1950s and 1960s create a wave of old-age pensioners four to five decades from now (Chart B-7).

Numercial dependency ratios do not show that the proportion of the elderly is increasing while that of the younger age groups is diminishing. This would not matter if public expenditures for both were the same. There is evidence, however, that per person government expenditures for the elderly (age 65 and over) are two to

Chart B-6

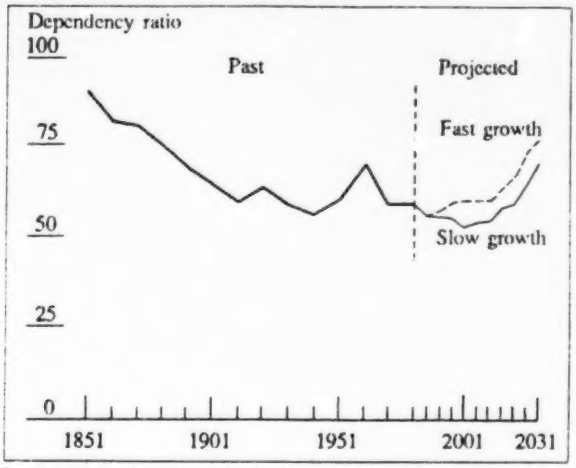
Population, Past and Projected, by Age and Sex, Canada, 1981-2026



SOURCE Based on data from Statistics Canada.

Chart B-7

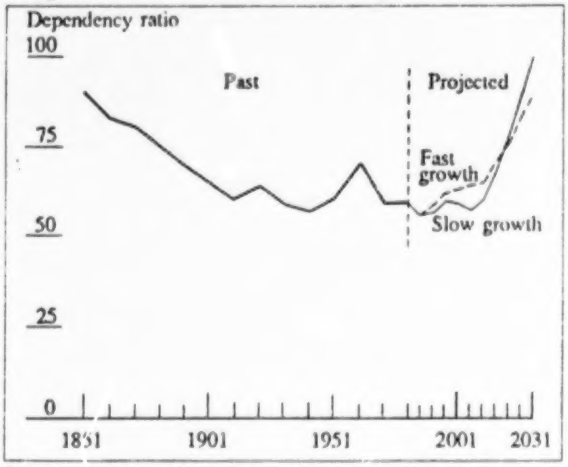
Numerical Dependency Ratios, Past and Projected, Canada, 1851-2031



SOURCE Based on data from Statistics Canada, and from D. K. Foot, *Canada's Population Outlook: Demographic Futures and Economic Challenges* (Toronto: 1982), Table 4-1, p. 129.

Chart B-8

Expenditure Dependency Ratios, Past and Projected, Canada, 1851-2031



SOURCE Based on data from Statistics Canada, and from D. K. Foot, *Canada's Population Outlook.*

three times as great as for the young (age 0-17). This difference is captured by expenditure dependency ratios. They do show that the rising share of elderly persons leads to disproportionately greater public expenditures. They also show that that will not happen until after the year 2011 when a slower population growth makes for greater per capita expenditures (Chart B-8).

Economic Developments

The burden of social expenditures depends not only on demographic developments and higher or lower dependency ratios but on economic growth as well. Strong economic growth will make it easier, weak economic growth more difficult.

Over the past several decades Canadians have made major social and economic gains: On average Canadians are better educated, more prosperous, and healthier. But equally some problems have become more acute. Canada's productivity diminished, unemployment increased, and economic growth declined.

The Deficit of the 1980s

Although the federal government experienced deficits for many years, they did not become a major element of the federal budget until the late 1970s. Before that deficits alternated with surpluses and, at times, the surplus was large enough to wipe out several years of accumulated deficits. Since 1975 the annual deficit has grown rapidly and persistently. By 1985 it approached 30 billion dollars (Chart B-9). With it has come a rise in interest rates. By now they absorb 25 per cent of the federal revenues, the highest proportion of the postwar period.

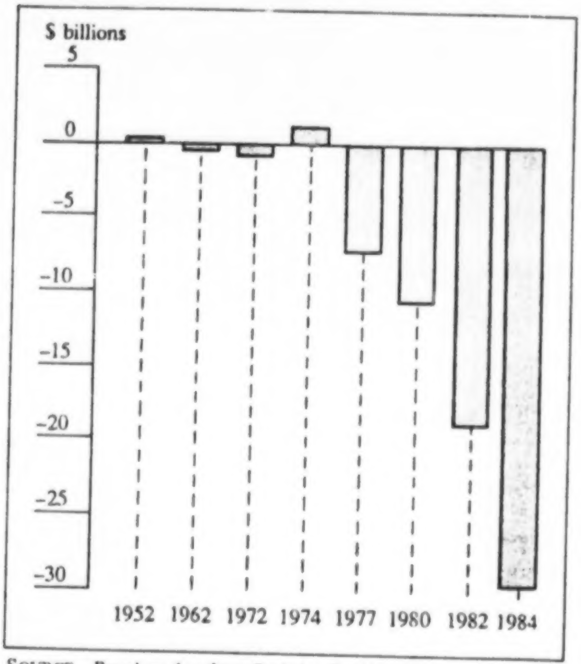
The growing size of budgetary deficits has narrowed the federal government's room to manoeuvre. Unless contained they would reach a critical mass at which the cost of servicing more debt will lead to ever greater deficits. At present, therefore, there is not much capacity to expand on existing programs and little or no capacity to embark on major new expenditure programs.

Recovery Into the 1990s

Under continued restraint on government spending in both Canada and the United States, weak commodity prices, and high unemployment, Canada's economy is projected to grow between 1985 and 1990 at 3.5 per cent per year, with an inflation rate of 4 per cent, an unemployment rate of 9 per cent, and a small increase in the federal deficit (Table B-1).

Chart B-9

Budgetary Position of the Federal Government, Canada, Selected Years, 1952-1984



SOURCE Based on data from Statistics Canada.

Table B-1

Projected Performance Range, Major Economic Indicators, Canada, 1985-90

	Projections		
	Base case	Pessimistic	Optimistic
Change in:	(Average annual percentage)		
Gross national product (1971 $)	3.5	2.8	4.1
Labour productivity	1.8	1.5	1.9
Consumer price index	3.9	4.6	3.5
Level of unemployment rate	9.2	10.2	8.1
Federal debt as share of gross national product	45.7	48.5	43.4

SOURCE Economic Council of Canada, *Strengthening Growth - Options and Constraints*, 22nd Annual Review (1985), Appendix Table A-10, p. 123.

The strength and stability of Canada's economic growth will depend on its export markets. Free-trade arrangements with the United States could be of great benefit and, in the longer term, stimulate investment and improve productivity performance. Changes in the United States economy would affect these developments. A high rate of inflation, a high interest rate, and weak domestic investment, would reduce Canada's future economic growth. A low rate of inflation, a low interest rate, and strong domestic investment, would strengthen it.

Health Expenditures and Services

At the end of the 1960s – after nearly a decade of strong economic growth – concerns emerged about a rational ordering of government expenditure priorities. At the time it was clear that faster economic growth yielded higher tax revenues without tax increase and that most of this "fiscal dividend" would go to health, education and social assistance. The largest expansion of expenditures was expected in health care mainly because of the nation-wide adoption of medicare providing all Canadians with "free" access to medical services. Health expenditures were projected to grow from 1967 to 1975 at a rate of 9 per cent per year (ECC 1969).

The Rise of Costs

Throughout the 1970s health expenditures continued to rise, in most years in excess of 10 per cent and in several years by over 15 per cent. A large part of this increase was the direct result of the economy-wide inflation. Health expenditures as a share of Gross National Product (GNP) remained quite stable within the 7 to 8 per cent range (Chart B-10).

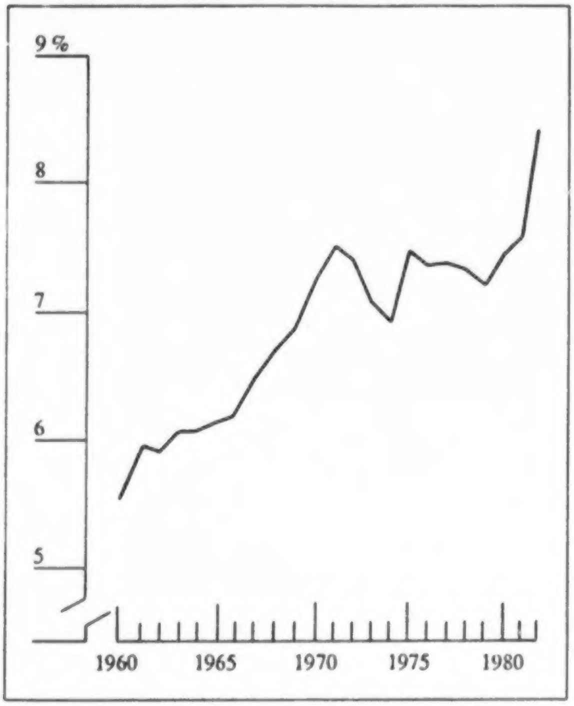
During the late 1970s researchers concluded that health expenditures associated with the aging of Canada's population would continue to grow at about the same rate as Canada's GNP (Boulet and Grenier 1978, pp. 72 and 92). It was projected that health care costs would not reach 8 per cent of Canada's GNP before the year 2000 (Denton and Spencer 1983). Yet the fact is that by the early 1980s health expenditures surpassed the 8 per cent level – some 15 to 20 years ahead of time.

Renewed Cost Pressures

If an aging population were the only factor behind rising health expenditures, the projections would have

Chart B-10

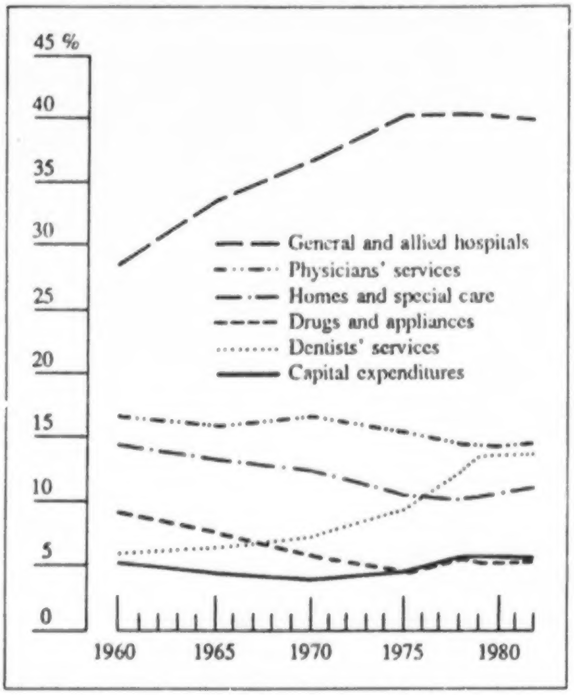
Health Expenditures as Percentage of Gross National Product, Canada, 1960-1982



SOURCE Based on data from Health and Welfare Canada.

Chart B-11

Major Categories of Health Expenditures as Percentage of Total, Canada, 1960-1982



SOURCE Based on data from Health and Welfare Canada.

been much closer to the mark. During the early 1980s Canada, as other countries, went through a deep economic recession and health expenditures absorbed a larger share of GNP. But neither the slump in economic growth nor the longer-term shift in the age structure of the population explains the continuous upward pressure on health expenditures. The problem is not so much that Canada's population is aging (though it is) but that the health care system is responding to the needs of the elderly by providing more and more intensive health care services. Expenditures on institutional care expanded relative to physicians' services, drugs and other health expenditures (Chart B-11).

A recent study of *The Impact of Demographic Change on the Health Care System in Canada* projects the use of health resources over the next four decades under two sets of assumptions: status quo and alternative scenarios (Woods Gordon 1984). Under the first, requirements of health resources are projected to increase at an average annual rate of 1.4 per cent from now to 2021. The smallest increases are projected for mental health facilities and physician services and the largest for long-term care and home care services (Table B-2).

Under "alternative scenarios" some cost savings are projected. They would be achieved by not institutionalizing so many of the elderly (in hospitals, long-term care facilities and mental health facilities), by substituting home care, by lowering the (inpatient) utilization rates of mental health facilities to the level already achieved in Saskatchewan in 1981, by reducing the length of hospital stays of younger patients by one day, and by introducing nurse practitioners into the primary health care system to meet some of the additional requirements for physician services. Among these alternatives the largest savings are predicted to come from lower rates of institutionalization. That would save an estimation of $15.9 billion by the year 2021 and lower the annual operating cost of health care facilities from $13.7 to $7.8 billion, a reduction of some 40 per cent.

Table B-2

"Status Quo" Projections of Major Health Facilities, Canada, 1981-2021

	Increase in utilization (average annual)	Additional annual operating costs in 2021	Additional cumulative capital construction costs
	(Per cent)	($ Millions)	
General and allied special hospitals (inpatients)	1.61	7,100	17,700
Long-term care facilities	1.98	4,300	12,400
Mental health facilities (inpatients)	1.31	380	360
Physician services	.93	1,900	-
Home care services (nursing visits)	1.97	43	-
Average annual total	1.40	13,723	30,460

NOTE As indicated in the text "status quo" projections are based on medium growth of the population, associated changes in age-sex structure, but no change in Canadian health care delivery methods.

SOURCE Woods Gordon, *Investigation of he Impact of Demographic Change on the Health Care System in Canada*, Final Report to the Task Force on the Allocation of Health Care Resources (Toronto: Woods Gordon, August 1984).

Judging by past projections and again by the rise in more recent years, however, health expenditures grew faster than demographic development and age-specific utilization rates would imply.

Provincial Variations

Better access to health services for all Canadians, regardless of income or province of residence, is the central objective of government-funded health insurance in Canada. When the programs of national health insurance were first established during the late 1950s and early 1960s, the population of all 10 provinces became entitled to the same basic hospital care benefits that were prescribed in the Hospital Insurance Act. At the time a consensus prevailed that national standards were essential. In later years the maintenance of national standards was interpreted to mean simply the existence of certain broad principles, such as comprehensive of service and universality of coverage.

Although it is clear from this line of reasoning that Canadian health insurance programs do not require uniform health services across the country, federal transfers to provinces have been based for many years on uniform per capita allocations. The Established Program Financing (EPF) arrangements of the late 1970s expanded on this approach when the federal government decided to provide not only tax-point transfers, to accommodate more closely provincial expenditure priorities, but also to provide additional per capita cash transfers in an effort to achieve greater equality of service among the provinces.

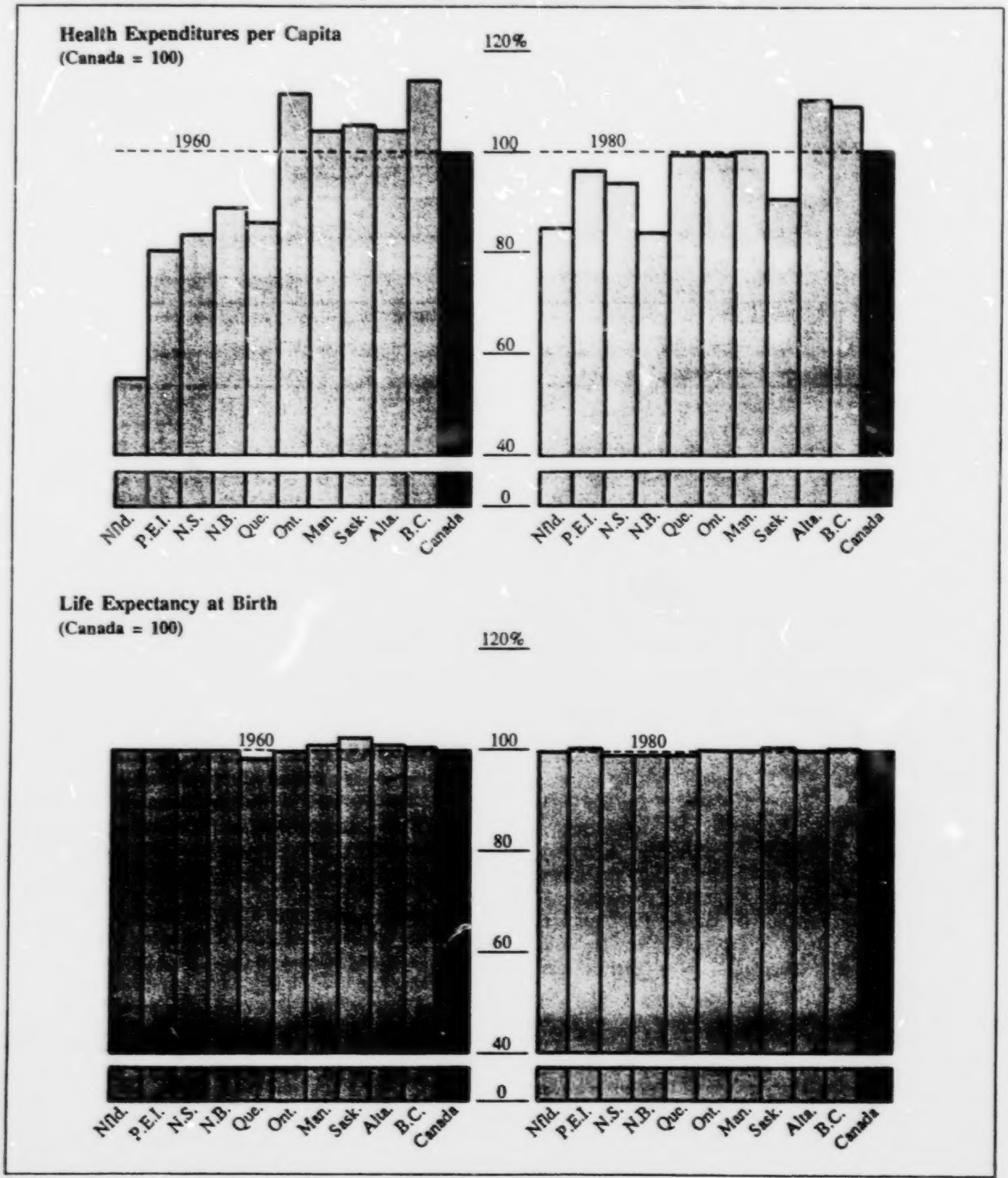
Historically, per capita health expenditures were below the national average in the Atlantic provinces and Quebec, and above average in Ontario and the four western provinces. Over the period that publicly financed insurance has been in effect, provincial variations in health expenditures have narrowed. In 1960, for example, per capita health expenditures ranged from a low of 57 per cent of the national average in Newfoundland to a high of 114 per cent in British Columbia, a range in excess of 50 percentage points. By 1980 that range was reduced to roughly 20 percentage points (Chart B-12)

Nevertheless the range for individual expenditure categories remains large. In 1981, for example, the provincial shares of hospital operating expenditures, as a proportion of total health expenditures, ranged from a low of 29 per cent in Prince Edward Island to a high of 49 per cent in Quebec. Expenditures on homes for special care ranged from 9 per cent in British Columbia to 18 per cent in Prince Edward Island (Table B-3).

Today health expenditures vary among the provinces on a per capita basis by more than 20 per cent, by life expectancy – one of the most widely used indicators of

Chart B-12

Health Expenditures and Life Expectancy, Canada and Provinces, 1960-1980



SOURCE Based on data of Health and Welfare Canada, and from Statistics Canada.

Table B-3

Selected Categories of Health Expenditures as Percentages of Total Health Expenditures, Canada and Provinces, 1981 (Preliminary)

	Categories				
	General and allied special hospitals	Home for special care	Physician services	Drugs and all other	Total
			(Per cent)		
Newfoundland	42	13	10	35	100
Prince Edward Island	29	18	12	41	100
Nova Scotia	41	13	13	33	100
New Brunswick	39	18	10	33	100
Quebec	49	14	13	24	100
Ontario	37	15	17	31	100
Manitoba	37	18	12	33	100
Saskatchewan	38	15	13	34	100
Alberta	36	11	14	39	100
British Columbia	36	9	17	38	100
Canada	40	14	14	33	100

SOURCE Health and Welfare Canada, *National Health Expenditures in Canada, 1970-1982* (Ottawa: HWC, 1984).

health status and output of health resources – varies by only 2 per cent. There is no obvious correlation between provincial health expenditures and life expectancy (Chart B-12).

Notes

CHAPTER 2

1 My calculations from *National Health Expenditures in Canada 1970-1982* (Ottawa: Health and Welfare Canada, 1984); and from *OECD Economic Outlook*, No. 36 (December 1984), Table R11.

2 *Problems of Social Security under Economic Recession and Inflation* (Geneva: International Social Security Association, 1978); and Roger A. Beattie, "Financial disequilibrium due to the evolution of employment and unemployment," *International Social Security Review*, Vol. XXXV, No. 2 (1982), pp. 183-95. Meanwhile, because of the steady increase in their numbers of aged, every country has had to devote more resources to social security expenditures: Max Horlick, *Social Security in Europe: The Impact of an Aging Population* (Washington: U.S. Government Printing Office, 1981; prepared for the Special Committee on Aging, United States Senate); and Jean-Jacques Rosa (ed.), *The World Crisis in Social Security* (Paris: Bonnel Editions, 1982).

3 My calculations from Jean-Pierre Poullier, *Measuring Health Care 1960-1983* (Paris: Organisation for Economic Co-Operation and Development, 1985), Tables A-1 and H-3.

4 My calculations from F. H. Leacy (ed.), *Historical Statistics of Canada* (Ottawa: Statistics Canada, Second edition, 1983), Series B513 and F75.

5 The history and methods of hospital payment in Europe, Britain, the United States, and Canada are described and compared in Glaser, *Paying the Hospital*, to be published in 1987.

6 Expenditure for all health services per capita in Britain are half the amounts in Canada, despite the fact that Britain's population is older. As a share of GDP, Britain – whose GDP per capita is much smaller than Canada's – spends about 28 per cent less. Poullier, *Measuring Health Care* (op. cit., footnote 3, *supra*), Tables 1 and 2.

7 My calculations from Poullier, *Measuring Health Care* (op. cit., footnote 3, *supra*), Table D-1(B); and from additional sources in individual countries.

8 "World population data sheet" (Washington: Population Reference Bureau, 1985).

9 Described in Glaser, *Paying the Doctor* (Baltimore: The Johns Hopkins Press, 1970), Chap. VI; Glaser, *Health Insurance Bargaining* (New York: Gardner Press and John Wiley, 1978); and Glaser, "Lessons from Germany," *Journal of Health Politics, Policy and Law*, 8, No. 2 (Summer 1983), pp. 359-60.

10 Average annual increases in spending for professional services throughout Canada were:

	(Per cent)
1960-1965	8.5
1965-1970	12.8
1970-1971	18.0
1971-1972	10.8

SOURCE *National Health Expenditures in Canada, 1960-1973* (Ottawa: Health and Welfare Canada, 1975), p. 4.

11 Robert G. Evans, *Strained Mercy: The Economics of Canadian Health Care* (Toronto: Butterworths, 1984), pp. 302-304.

12 Compare the policies of Canada and of other developed countries in Alfonso Mejia et al., *Physician and Nurse Migration* (Geneva: World Health Organization, 1979), pp. 172-82.

13 Eva Ryten, "A review of trends in the number of places available for the study of medicine in Canada" (Ottawa: Association of Canadian Medical Colleges, August 1985).

14 W. Glaser, *Paying the Hospital*, Chap. IX; and Daniel LeTouzé, "Hospital bed planning in Canada," *International Journal of Health Services*, Vol. 14, No. 1 (1984), pp. 113-19. An excellent summary of resource allocation in the British National Health Service is Gwyn Bevan et al., *Health Care Priorities and Management* (London: Croom Helm, 1980).

15 W. Glaser, "Long-term care: American problems and foreign solutions" in *Continuing Care: International Prototypes for America's Aged* (Select Committee on Aging, United States House of Representatives,

Hearings held on 15 July 1985; Washington: U.S. Government Printing Office, Comm. Pub. No. 99-523, 1985), pp. 189-215.

16 When several Canadian provinces added nursing home benefits, utilization and costs jumped noticeably. But after a few years, strict screening of eligibility for nursing home admissions and substitution of home care services caused nursing home utilization and costs to level off. Few countries have developed nursing homes and home care in tandem. Rosalie A. Kane and Robert L. Kane, "The feasibility of universal long-term care benefits," *New England Journal of Medicine*, Vol. 312, No. 21 (23 May 1985), pp. 1361-63.

17 Morris L. Barer et al., *Controlling Health Care Costs by Direct Charges to Patients: Snare or Delusion?* (Toronto: Ontario Economic Council, 1979); and Robin F. Badgley and R. David Smith, *User Charges for Health Services* (Toronto: Ontario Council of Health, 1979).

18 Walter N. Leutz et al., *Changing Health Care for an Aging Society: Planning for the Social Health Maintenance Organization* (Lexington, Mass.: Lexington Books, D. C. Heath and Company, 1985).

19 Many of the proposals for changing the Canadian system are summarized in Greg L. Stoddart, "Rationalizing the health-care system," in Thomas J. Courchene et al. (eds.), *Ottawa and the Provinces: The Distribution of Money and Power* (Toronto: Ontario Economic Council, 1985), Vol. 2, pp. 3-39.

20 For example, R. Launois et al., "Les réseaux de soins coordonnés (R.S.C.) : Propositions pour une réforme profonde du système de santé," *Revue française des affaires sociales*, Vol. 39, No. 1 (January-March 1985), pp. 37-62; Gabriella Pedroni and Peter Zweifel, *Die "Health Maintenance Organization" – Die Alternative im Gesundheitswesen* (Basel: Pharma Information, 1981); and F. T. Schut and W.P.M.M. van de Ven, "Health maintenance organizations: Een structurele verandering in de Amerikaanse gezondheidszorg," *Economische Statistische Berichten* (6 November 1985), pp. 1111-17.

21 Harold S. Luft, "Trends in medical care costs," *Medical Care*, Vol 18, No. 1 (January 1980), pp. 1-16; and Joseph P. Newhouse et al., "Are fee-for-service costs increasing faster than HMO costs?", *Medical Care*, 23, No. 8 (August 1985):960-66. The many hypotheses about lower costs and greater efficiency are in Harold S. Luft, *Health Maintenance Organizations: Dimensions of Performance* (New York: John Wiley and Son, 1981).

22 Evident in Lawrence D. Brown, *Politics and Health Care Organization: HMOs as Federal Policy* (Washington: The Brookings Institution, 1983).

23 Denis J. Roch, Robert G. Evans, and David W. Pascoe, *Manitoba and Medicare: 1971 to the Present* (Winnipeg: Manitoba Health, 1985).

CHAPTER 3

1 The data used in the regression models were taken from patient claims histories which included all their contacts with physicians, hospitals, and nursing homes, and all deaths over the period July 1972 through June 1978.

2 This figure substantially underestimates the number of very elderly in Manitoba that year because of all the exclusions necessary to make the three groups parallel. That is, individuals were excluded from Table 3-11 if their physician had a small practice, if any of their hospitalizations were in an extended treatment hospital, if they died in 1974, etc. However, various methods of reducing these exclusions were tried and the usage patterns across the three groups were consistent.

3 In a multivariate analysis, practising in a rural area, and practising in an area with a large bed supply were the two factors most strongly associated with a hospital-prone practice style.

CHAPTER 4

1 The National Center for Health Statistics, Illness and Disability Branch, Division of Health Interview Statistics: Unpublished data from 1978 National Health Interview Survey, cited in U.S. Department of Health and Human Services Publication (OHDS) 81.20704.

2 The Institutional Statistics Section, Health Division, Statistics Canada (October 1984).

3 It is far from clear that economists, or any other "professional" experts (including physicians) have any comparative advantage over ordinary citizens/taxpayers when it comes to decisions on the former question. Nor should professionals be treated as if they do (although this is often the case) because such normative decisions rest on values, not evidence.

4 Suffice to say there seems reason to question the validity of at least one of these international

comparisons. Thus, so far as can be determined, the cited U.S. rate of 5.3 per cent excludes all hospital utilization and refers only to the (point prevalence) institutionalization of elderly persons (65 years and older) in skilled nursing facilities (SNFs) and intermediate care facilities (ICFs), i.e., in facilities informally grouped as "nursing homes." See, for example, Doty et al. (1985).

5 That is, $3.8 billion = $185 x 20.4 million "released" patient-days in hospitals and $2.3 billion = $45 x 51.0 million "released" patient-days in long-term care facilities.

6 This calculation assumes a per visit cost of $17.95 based on the 1980/81 experience of the Ontario Home Care Program with home nurse visits contractually supplied by the Victorian Order of Nurses (VON). See Woods Gordon (1984), p. 66.

7 The estimate of $40 per day for palliative care in 1981 was derived by discounting (at 6 per cent per year) current (1985) costs of $50 per day for palliative care informally reported by the Saskatoon Home Care Program (source: personal communication with Evelyn Shapiro).

8 Derived by an inflation-adjustment of the $161 cost for the first month of care in the Manitoba program in 1978/79, as reported in the Manitoba/Canada Home Care study. See Health and Welfare Canada (1982).

9 Derived by an inflation-adjustment of the $84 average monthly cost of care in the Manitoba program in 1978/79.

10 Costing 20.4 million patient-days at an average of $67.50 per day yields $1.38 billion. Deducting this sum from the $1.53 billion in long-term care "savings" (resulting from releasing 51 million patient-days at an average of $30 per day) yields $150 million in net savings.

11 Derived from data reported in Statistics Canada (1984).

12 In an earlier analysis, Lefebvre et al. (1979) projected that hospital use by the non-elderly in 2021 would be reduced 19 per cent if trends in length of stay and admission rates over the period 1972-75 were extended to 1985 and held constant thereafter. Termed by the authors a "likely" estimate of future demand, it made no explicit assumption about the use-reducing potential of day surgery and other specific technologies.

13 Though previously maligned as too high, - this per diem is arguably too *low* for this population. Manitoba data (MHSC 1985) indicate that 75 to 80 per cent of hospital use by persons under age 65 is accounted for by acute, relatively service intensive and hence costly stays less than 60 days duration.

14 This expenditure projection involves a 1980/81 baseline of $3.5 billion (Health and Welfare Canada, n.d.) and a multiplier for population growth and aging of 1.45 as per Woods Gordon (1984).

CHAPTER 5

1 The English version of *Objectif: Santé* will soon be available in boodstores, thanks to the Canadian Hospital Association, which is responsible for its publication and distribution.

2 Carol Buck, unpublished data.

CHAPTER 7

1 It is theoretically possible that all degenerative diseases will be prevented and people will just "drop dead." There is no evidence to support this attractive idea, and it will not be considered further.

2 See R. W. Evans, "The heart transplant dilemma." Issues in *Science and Technology*, in press.

3 R. W. Evans, "The heart transplant dilemma."

4 See R. W. Evans, "The heart transplant dilemma," and also "Coverage and reimbursement for heart transplantation," *International Journal of Technology Assessment in Health Care*, in press.

5 See also R. W. Evans; D. L. Manninen; L. P. Garrison, Jr. and A. Maier, "Donor availability as the primary determinant of the future of heart transplantation," *Journal of the Amercian Medical Association*, in press.

CHAPTER 8

1 For further discussion of this approach, see M. A. Somerville, "Pain and suffering at interfaces of medicine and law," *University of Toronto Law Journal* (Winter 1986), forthcoming.

2 M. A. Somerville, "Legal and ethical dilemmas in modern medicine: Signs and symbols of our collective

conscious and unconscious," unpublished paper presented at the Annual Conference of the United Church, Iroquois, Ontario (1984).

CHAPTER 9

1 *L'actualité médicale* (March 12, 1986), p. 28.

2 Jonathan A. Showstack, Mary Hughes Stone, and Steven A. Schroeder, *New England Journal of Medicine* (November 7, 1985), pp. 1201-1207.

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Program of the Colloquium on Aging with Limited Health Resources

Winnipeg, Manitoba
May 5th and 6th, 1986

Monday, May 5th

Opening Remarks

Judith Maxwell
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International Perspective

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Demand and Supply of Health Care Services

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Alternative Modes of Health Care Delivery

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Advances in Preventive Care

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Tuesday, May 6th

Advances in Medical Technology

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Canada's Future Health Care Program

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Bibliography

AARON, H. J., and W. B. SCHWARTZ. 1984. *The Painful Prescription: Rationing Hospital Care*. Washington, D.C.: The Brookings Institution.

ABEL-SMITH, B. 1985. "Who is the odd man out?: The experience of Western Europe in containing the costs of health care." *Milbank Memorial Fund Quarterly* 63:1-17.

ABRAMS, P. 1978*a*. *Work, Urbanism and Inequality*. London: Weidenfeld and Nicholson.

______. 1978*b*. "Community care: Some research problems and priorities." In Barnes and Connelly (eds.), *Social Care Research*, pp. 78-99.

ALTMAN, S., and R. BLENDON (eds.). 1979. "Medical technology: The culprit behind health care costs?" Department of Health, Education and Welfare Pub. No. (PHS) 79-3216. National Center for Health Services Research and Bureau of Health Planning. Hyattsville, Maryland.

AMERICAN COLLEGE OF PHYSICIANS. Health and Public Policy Committee. 1984. "Long-term care of the elderly." *Annals of Internal Medicine* 100:760-63.

ANDERSEN, R. 1968. "A behavioral model of families' use of health services: HSA studies." Research Series No. 25. University of Chicago. Chicago.

ANDERSON, M. 1971. *Family Structure in Nineteenth-Century Lancashire*. Cambridge, U.K.: Cambridge University Press.

ANGELL, M. 1985. "Cost containment and the physician." *Journal of the American Medical Association* 254:1203-1207.

ANGUS, D. E. 1984 "Future Health Care Costs in Canada." Notes for a presentation to the John Deutsch Memorial Policy Forum on Medicare in an Age of Restraint, Queen's University, Kingston, Ont. (March 7).

______. 1985. "Health care costs: Past, present, and (can we forecast?) the future." University of Ottawa, Faculty of Administration. Ottawa.

ANSHEN, R. N. 1974. "World perspectives: What this series means." Prologue to E. Fromm, *The Art of Loving*. New York: Harper & Row.

Application of Operations Research Technology to Health Services Issues. London: Pergamon (forthcoming).

ASHLEY, M. J. 1984. In Smart and Glaser (eds.), *Research Advances in Alcohol and Drug Problems*, pp. 99-147.

BADER, J. E. 1985. "Respite care: Temporary relief for caregivers." *Women and Health* 10:39-52.

BADOU, G. 1985. *L'état de santé: Notre santé aux mains des politiques*. Paris: Buchet/Chastel.

BAIRD, D. 1974. "The epidemiology of low birth weight: Changes in incidence in Aberdeen, 1945-1972." *Journal of Biological Science* 6:323.

BANTA, H. D. (ed.). 1982. *Resources for Health: Technology Assessment for Policy Making*. New York: Praeger.

BANTA, H. D.; C. J. BEHNEY; and J. S. WILLEMS. 1981. *Toward Rational Technology in Medicine: Considerations for Health Policy*. New York: Springer.

BANTA, H. D., and K. B. KEMP. 1982. *The Management of Health Care Technology in Nine Countries*. New York: Springer.

BARKER, T.F.W.; J. G. ZIMMER; C. VANBUREN; et al. 1985. "Geriatric consultation teams in acute hospitals: Impact on backup of elderly patients." *Journal of the American Geriatrics Society* 33:422-28.

BARNES, J., and N. CONNELLY (eds.). 1978. *Social Care Research*. London: Bedford Square.

BAYLEY, M. 1982. "Helping care to happen in the community." In Walker (ed.), *Community Care*, pp. 179-96.

BAZZOLI, G. J. 1985. "Health care for the indigent: Literature review and research agenda for the future." *AHA Council Report*. Chicago: American Hospital Association.

BELL, D. 1976. *The Coming of Post-Industrial Society.* New York: Basic Books.

BESDINE, R. W. 1984. "Functional assessment in the elderly: Relationships between function and diagnosis." Paper prepared for the Fifth Annual Invitational Symposium on the Elderly and Their Health, School of Medicine, University of Maryland, Baltimore (October 9).

BEVERIDGE, W. 1942. *Social Insurance and Allied Services.* Cmnd 6404. London: His Majesty's Stationery Office.

BIRD, R. M., and R. FRASER. 1981. *Commentaries on the Hall Report.* Toronto: Ontario Economic Council.

BLACK, D. 1984. *An Anthology of False Antitheses.* London: Nuffield Provincial Hospitals Trust.

BLANCHET, M.; F. CAMIRAND; S. DILLARD; et al. 1983. "La santé des Québécois: Priorités d'hier et d'aujourd'hui." *Carrefour des affaires sociales* 5:19-24.

BLENDON, R. J., and D. E. ALTMAN. 1984. "Public attitudes about health-care costs: A lesson in national schizophrenia." *New England Journal of Medicine* 311:613-16.

BLOCK, J. 1985. "Utilization of informal networks within a universal home care program: Care planning for elderly patients in a Canadian hospital." Paper prepared for the Thirteenth International Congress of Gerontology, New York (July).

BLOOM, B. 1982. "Current estimates from the National Health Interview Survey, United States, 1981." *Vital and Health Statistics.* Series 10, No. 141. Department of Health and Human Services Pub. No. (PHS) 83-1569. Washington, D.C.: U.S. Government Printing Office.

BLUMENTHAL, D.; M. SCHLESINGER; P. B. DRUMHELLER; et al. 1986. "The future of Medicare." *New England Journal of Medicine* 314:722-28.

BOAN, J. A. (ed.). 1984. *Proceedings of the Second Canadian Conference on Health Economics.* 1984. J. A. Boan (ed.). Regina, Sask.: University of Saskatchewan.

BOULET, J.-A., and G. GRENIER. 1978. "Health care expenditures in Canada and the impact of demographic changes on future government health insurance program expenditures." Discussion Paper No. 123. Economic Council of Canada. Ottawa.

BOULET, J.-A., and D. HENDERSON. 1979. "Distributional and redistributional aspects of government health insurance programs in Canada." Discussion Paper No. 146. Economic Council of Canada. Ottawa.

BOURGEOIS-PICHAT, J. 1952. *Population* 7:381.

_____. 1978. "Future outlook for mortality decline in the world." *Population Bulletin of the United Nations* 11.

BRAINARD, R., and J. MADDEN. 1985. *Science and Technology Policy Outlook: 1985.* Paris: Organisation for Economic Co-operation and Development.

BRITISH GERIATRICS SOCIETY. 1982. "Health in old age: The contributions of geriatric medicine." World Assemby on Aging. Vienna.

BROCKLEHURST, J. C.; J. T. LEEMING; M. H. CARTY; and J. M. ROBINSON. 1978. "Medical screening of old people accepted for residential care." *Lancet* 2:141-42.

BRODY, E. M. 1981. "'Women in the middle' and family help to older people." *Gerontologist* 21:471-80.

BRODY, J. A. 1982. "Life expectancy and the health of older persons." *Journal of the American Geriatrics Society* 30:638-81.

_____. 1985. "Prospects for an aging population." *Nature* 315:463.

BROOK, R. H.; J. E. WARE Jr.; W. H. ROGERS; et al. 1983. "Does free medical care improve adults' health?" *New England Journal of Medicine* 309:1426-34.

BUCK, C., and H. SIMPSON. 1982. "Infant diarrhoea and subsequent mortality from heart disease and cancer." *Journal of Epidemiology and Community Health* 36:27-30.

BUSH, J. W. 1980. Letter to Dr. H. D. Banta, dated March 11, summarizing data presented at a professional meeting.

BUXTON, M. J. 1985. "Problems in economic appraisal of new health technology: The case of heart transplants." Paper prepared for an EEC Workshop on the Methodology of Economic Appraisal of Health Technology, Birmingham, England (September 23-26).

BYINGTON, R., et al. 1979. "Recent trends of major coronary risk factors and coronary heart disease mortality in the United States and other industrialized countries." In *Proceedings of the Conference on the Decline in Coronary Heart Disease Mortality*, Chap. 17.

CALABRESI, G., and P. BOBBITT. 1978. *Tragic Choices.* New York: W. W. Norton.

CAMIRAND, F. 1983. *Les coûts de la maladie.* Conseil des affaires sociales et de la famile. Québec: Éditeur officiel du Québec.

CAMPBELL, A.; P. E. CONVERSE; and W. L. RODGERS. 1976. *The Quality of American Life.* New York: Russell Sage Foundation.

CAMPION, E. W.; A. BANG; and M. I. MAY. 1983. "Why acute-care hospitals must undertake long-term care." *New England Journal of Medicine* 308:71-75.

CANADA. 1981. *The Health of Canadians: Report of the Canada Health Survey.* Ottawa: Supply and Services Canada.

CANADIAN MEDICAL ASSOCIATION. Task Force on the Allocation of Health Care Resources. 1984. *Health: A Need for Redirection.* Ottawa: CMA.

_____. Task Force on the Costs of Health Services in Canada. 1969. *Report.* Ottawa: CMA.

_____. Task Force on the Periodic Health Examination. 1979. "The periodic health examination." *Canadian Medical Association Journal* 121:3-45.

CAPITAL REGIONAL HOSPITAL DISTRICT. Hospital and Health Planning Commission. 1985. "Long-term care patients in acute care beds: Implication of action." Victoria, B.C.

CHAPMAN, S. 1985. "Stop-smoking clinics: A case for their abandonment." *Lancet* 1:918-20.

CHAPPELL, N. L.; L. A. STRAIN; and A. A. BLANDFORD. 1986. *Aging and Health Care: A Social Perspective.* Toronto: Holt, Rinehart and Winston.

COLLINS, A. H., and D. L. PANCOAST. 1976. *Natural Helping Networks.* Washington, D.C.: National Association of Social Workers.

COLVEZ, A., and M. BLANCHET. 1981. "Disability trends in the United States population, 1966-1976: Analysis of reported causes." *American Journal of Public Health* 71:464-71.

COLVEZ, A., and M. BLANCHET. 1983. "Potential gains in life expectancy free of disability: A tool for health planning." *International Journal of Epidemiology* 12:224-29.

CONSEIL DES AFFAIRES SOCIALES ET DE LA FAMILLE. 1984. *Objectif: Santé.* Québec.

COURCHENE, T. J.; D. W. CONKLIN; and G.C.A. COOK (eds.) 1985. *Ottawa and the Provinces: The Distribution of Money and Power.* Toronto: Ontario Economic Council.

CRAWSHAW, R.; M. J. GARLAND; B. HINES; and C. LOBITZ. 1985. "Oregon health decisions: An experiment with informed community consent." *Journal of the American Medical Association* 254:3213-16.

CULYER, A. J., and B. HORISBERGER (eds.). 1982. *Economic and Medical Evaluation of Health Care Technologies.* New York: Springer.

DAFOE, G. H. 1986. "A proposal to establish health objectives and strategies for Canada." *Canadian Journal of Public Health* 76:290.

DAVIS, K., and D. ROWLAND. 1986. *Medicare Policy: New Directions for Health and Long-Term Care.* Baltimore: Johns Hopkins University Press.

DAY, P., and R. KLEIN. 1985. "Towards a new health care system." *British Medical Journal* 291:1291.

DEBER, R. B. "The determinants of treatment decision making in end-stage renal disease: Implication for the ability to generalize from case studies." *Medical Decision Making* (in press).

DEBER, R. B., and E. VAYDA. 1985. "Implementing policy change under universal health insurance in Canada: The Ontario example." In Knox (ed.), *Investigative Methods.*

DE KERVASDOUE, J. 1984. "La crise conduira à de nouvelles formes de solidarité." *L'assurance maladie a cent ans, 1883-1993.* Montréal: Éditions Administration et Santé.

DELARGY, J. 1957. "Six weeks in: Six weeks out." *Lancet*, pp. 418-19.

DENTON, F. T.; A. GAFNI; B. G. SPENCER; and G. L. STODDART. 1982. "Potential savings from the adoption of nurse practitioner technology in the canadian health care system." Research Report No. 45. McMaster University, Faculty of Social Sciences, Program for Quantitative Studies. Hamilton, Ont.

DENTON, F. T., and B. G. SPENCER. 1975. "Health-care costs when the population changes." *Canadian Journal of Economics* 8:34-48.

DENTON, F. T., and B. G. SPENCER. 1983. "Population aging and future health costs in Canada." *Canadian Public Policy* 9:155-63.

DILLARD, S. 1983. *Durée ou qualité de la vie?* Conseil des affaires sociales et de la famille. Québec: Éditeur officiel du Québec.

______. 1985. *Le point sur les habitudes de vie: L'approche écologique*. Conseil des affaires sociales et de la famille. Québec: Éditeur officiel du Québec.

DOEGE, T. C. 1986. "The neglected disease: An update." *Journal of the American Medical Association* 255:1334.

DOTY, P.; K. LIU; and J. WIENER. 1985. "An overview of long-term care." *Health Care Financing Review* 6:69-78.

DOUBILET, P.; M. C. WEINSTEIN; and B. J. McNEIL. 1986. "Use and misuse of the term 'cost-effective' in medicine." *New England Journal of Medicine* 314:253-56.

DUNN, R.; L. MacBEATH; and D. ROBERTSON. 1983. "Respite admissions and the disabled elder." *Journal of the American Geriatrics Society* 31:613-15.

ECONOMIC COUNCIL OF CANADA. 1969. *Sixth Annual Review: Perspective 1975*. Ottawa: Queen's Printer.

______. 1982. *Financing Confederation: Today and Tomorrow*. Ottawa: Supply and Services Canada.

EDERER, F. et al. 1971. "Cancer among men on cholesterol-lowering diets." *Lancet* 2:204-206.

EISDORFOR, C. (ed.). 1986. *Reshaping Health Care for the Elderly: Recommendations for National Policy*. Baltimore: Johns Hopkins University Press.

ENTHOVEN, A. C. 1978. "Consumer choice health plan." Parts 1, 2. *New England Journal of Medicine* 298:650-58, 709-20.

______. 1980. *Health Plan: The Only Practical Solution to the Soaring Cost of Medical Care*. Reading, Mass.: Addison-Wesley.

______. 1985. *Reflections on the Management of the National Health Service*. London: Nuffield Provincial Hospitals Trust.

ERMISCH, J. 1983. *The Political Economy of Demographic Change*. London: Heinemann.

ESTES, C. L., and R. J. NEWCOMER and ASSOCIATES. 1985. *Fiscal Austerity and Aging: Shifting Government Responsibility for the Elderly*. Beverly Hills, Calif.: Sage Library of Social Research.

EUROSTAT. 1984. *Demographic Statistics*. Brussels: Statistical Office of the European Communities.

EVANS, R. G. 1983*a*. "Health care in Canada: Patterns of funding and regulation." *Journal of Health Politics, Policy and Law* 8:1-43.

______. 1983*b*. "We have seen the future, and they is us: Health care and the greying of Canada." Discussion Paper No. 84-02. University of British Columbia, Department of Economics. Vancouver.

______. 1984. *Strained Mercy: The Economics of Canadian Health Care*. Toronto: Butterworths.

______. 1985. "The political economy of health care." Discussion Paper No. 85-24. University of British Columbia, Department of Economics. Vancouver.

EVANS, R. W. 1983. "Health care technology and the inevitability of resource allocation and rationing decisions." Parts 1, 2. *Journal of the American Medical Association* 249:2047-53, 2208-19.

______. 1985. "The socioeconomics of organ transplantation." *Transplant Proceedings* 17(6) Suppl. 4:129-36.

______. "Coverage and reimbursement for heart transplantation." *International Journal of Technology Assessment in Health Care* (in press).

______. "The heart transplant dilemma." *Issues in Science and Technology* (in press).

EVANS, R. W.; D. L. MANNINEN; L. P. GARRISON, Jr.; et al. 1985. "The quality of life and end-stage renal disease patients." *New England Journal of Medicine* 312:553-59.

EVANS, R. W.; D. L. MANNINEN; L. P. GARRISON, Jr.; and A. MAIER. "Donor availability as the primary determinant of the future of heart transplantation." *Journal of the American Medical Association* (in press).

EVANS, R. W.; D. L. MANNINEN; A. MAIER; et al. 1985. "The quality of life of kidney and heart transplant recipients." *Transplant Proceedings* 17:1579-82.

EVANS, R. W.; D. L. MANNINEN; T. D. OVERCAST; et al. 1984. *The National Heart Transplantation Study: Final Report*. Seattle: Battelle Human Affairs Research Centers.

EVERSLEY, D. 1982. "The demography of retirement: Prospects to the year 2030." In Fogarty (ed.), *Retirement Policy*.

FINCH, J., and D. GROVES (eds.). 1983. *A Labour of Love*. London: Routledge & Kegan Paul.

FISHER, R. H.; G. W. NADON; P. DAWSON; and C. CURRIE-MILLS. 1981. "A geriatric day hospital: The Sunnybrook experience." *Canadian Medical Association Journal* 125:447-50.

FISHER, R. H., and M. L. ZORZITTO. 1983. "Placement problem: Diagnosis, disease or term of denigration?" *Canadian Medical Association Journal* 129:331-33.

FLEMING, S. T.; E. J. KOBRINSKI; and M. J. LONG. 1985. "A multidimensional analysis of the impact of high cost hospitalization." *Inquiry* 22:178-87.

FLOYD, J. 1985. "In search of financing for a long-term care plan." *Journal of Gerontological Nursing* 11:14-16.

FOGARTY, M. (ed.). 1982. *Retirement Policy: The Next Fifty Years.* London: Heinemann.

FOOT, D. K. 1982. *Canada's Population Outlook: Demographic Futures and Economic Challenges.* Canadian Institute for Economic Policy. Toronto: Lorimer.

FORSDAHL, A. 1977. "Are poor living conditions in childhood and adolescence an important risk factor for arteriosclerotic heart disease?" *British Journal of Preventive and Social Medicine* 31:91-95.

FRANCIS, S. 1986. "U.S. industrial outlook 1986: Health and medical services." *Medical Benefits* 3(4):6-7.

FREEDMAN, S. A. 1985. "Megacorporate health care: A choice for the future." *New England Journal of Medicine* 312:579-82.

FRIEDMAN, E. 1985. "The coming era of hard choices: An interview with Governor Richard Lamm of Colorado." *Hospitals* 59(8):96-100.

FRIES, J. F. 1980. "Aging, natural death, and the compression of morbidity." *New England Journal of Medicine* 303:130-35.

______. 1984. "The compression of morbidity." In Robinson et al. (eds.), *Aging and Technological Advances.*

FUCHS, V. R. 1974. *Who Shall Live?* New York: Basic Books.

______. 1985. "The rationing of medical care." *New England Journal of Medicine* 312:1332-33.

GALBRAITH, J. K. 1977. *The New Industrial State.* New York: New American Library.

GARBARINO, J. 1983. "Social support networks: Rx for the helping professions." In Whittaker and Garbarino (eds.), *Social Support Networks*, pp. 3-28.

GARBER, A. M.; V. R. FUCHS; and J. F. SILVERMAN. 1984. "Case mix, costs and outcomes: Differences between faculty and community services in a university hospital." *New England Journal of Medicine* 310:1231-37.

GARNICK, D. W., and T. SHORT. 1985. *Utilization of Hospital Inpatient Services by Elderly Americans.* Department of Health and Human Services Pub. No. (PHS) 85-3351. Washington, D.C.: U.S. Government Printing Office.

GARRITY, T. F.; G. W. SOMES; and M. B. MARX. 1978. "Factors influencing self-assessment of health." *Social Science and Medicine* 12:77-81.

GIBBINS, F. J.; M. LEE; P. R. DAVIDSON; et al. 1982. "Augmented home nursing as an alternative to hospital care for chronic elderly invalids." *British Medical Journal* 284:330-33.

GILBERT, J. R.; W. FELDMAN; L. S. SIEGEL; et al. 1984. "How many well-baby visits are necessary in the first two years of life?" *Canadian Medical Association Journal* 130:857-61.

GILLICK, M. R.; N. A. SERRELL; and L. S. GILLICK. 1982. "Adverse consequences of hospitalization in the elderly." *Social Science and Medicine* 16:1033-38.

GOLDBERG, E. M., and S. HATCH (eds.). 1981. *A New Look at the Personal Social Services.* London: Policy Studies Institute.

GOLDBERG, E. M., and N. CONNELLY (eds.). 1981. *Evaluative Research in Social Care.* London: Heinemann.

GRAHAM, H. 1983. "Caring: A labour of love." In Finch and Groves (eds.), *A Labour of Love*, pp. 13-30.

GREENE, S. B. 1984. "Utilization variations in North Carolina." *Health Affairs* 3(4):149-51.

GRIFFITHS, R. A., and L. Z. COSIN. 1976. "The floating-bed." *Lancet* 1:684-85.

GROSS, M. J., and C. W. SCHWENGER. 1981. *Health Care Cost for the Elderly in Ontario, 1976-2026.* Toronto: Ontario Economic Council.

GUILLEMARD, A. M. (ed.). 1983. *Old Age and the Welfare State.* London: Sage.

HAKIM, C. 1982. "The social consequences of high unemployment." *Journal of Social Policy* 11:433-68.

HARDY, A. M.; K. RAUCH; D. ECHENBERG; et al. 1986. "The economic impact of the first 10,000 cases of acquired immunodeficiency syndrome in the the United

States." *Journal of the American Medical Association* 255:209-11.

HARRINGTON, C., and R. J. NEWCOMER. 1985. "Social/health maintenance organizations: New policy options for the aged, blind, and disabled." *Journal of Public Health Policy* 6:204-22.

HATCH, S. 1980. *Outside the State*. London: Croom Helm.

HAUG, M. R. 1985. "Home care for the ill elderly: Who benefits?" *American Journal of Public Health* 75:127-28.

HAVENS, B. 1986. "Boundary crossing: An organizational challenge for community based long-term care service agencies." In Pelham and Clark (eds.), *Managing Home Care*, pp. 77-98.

HAYNES, S. G., and M. FEINLEIB (eds.). 1980. *Epidemiology of Aging*. National Institutes of Health Pub. No. 80-969. Bethesda, Maryland: NIH.

HEALTH AND WELFARE CANADA. Health Programs Branch. 1977. *Review of the literature on home care*. Ottawa: Supply and Services Canada.

______. Policy, Planning and Information Branch. 1982. *Manitoba/Canada Home Care Study: An Overview of the the Results*. Ottawa: HWC.

______. Policy, Planning and Information Branch. 1984. *National Health Expenditures in Canada, 1970-82*. Ottawa: HWC.

HERTZMAN, C., and M. HAYES. 1985. "Will the elderly really bankrupt us with increased health care costs?" *Canadian Journal of Public Health* 76:373-77.

HESSE, K. A.; E. W. CAMPION; and N. CARAMOUZ. 1984. "Attitudinal stumbling blocks to geriatric rehabilitation." *Journal of the American Geriatrics Society* 32:747-50.

HICKS, B.; H. RAISZ; H. SEGAL; et al. 1981. "The triage experiment in coordinated care for the elderly." *American Journal of Public Health* 71:991-1003.

HIRSCHMAN, A. O. 1970. *Exit, Voice and Loyalty: Responses to Decline in Firms, Organizations and States*. Cambridge, Mass.: Harvard University Press.

HOBLER, K. E., and P. A. HOWLETTE. 1985. "Surgery in the very elderly." *Quality Review Bulletin* 11:339-41.

HOCHSTEIN, A. 1984. "A cost comparison in the treatment of long stay patients." *Canadian Public Policy* 10:177-84.

HODKINSON, H. M. 1975. *An Outline of Geriatrics*. London: Academic Press.

HOKENSTAD, M. C. 1985. "Coordinating health and social services for the elderly in developed nations." *Aging International* 12(3):11-15.

HUNT, A. 1978. *The Elderly at Home*. London: Her Majesty's Stationery Office.

HUNT, T. E., and R. D. CRICHTON. 1977. "One-third of a million days of care at home, 1959 to 1975." *Canadian Medical Association Journal* 116:1351-55.

INSTITUTE OF MEDICINE. 1985*a*. *Assessing Medical Technologies*. Washington, D.C.: National Academy Press.

______. 1985*b*. *Health in an Older Society*. Washington, D.C.: National Academy Press.

ISAACS, B.; M. LIVINGSTONE; and Y. NEVILLE. 1972. *Survival of the Unfittest*. London: Routledge & Kegan Paul.

JENNETT, B. 1984. *High Technology Medicine: Benefits and Burdens*. London: Nuffield Provincial Hospitals Trust.

JOHNSON, M., and D. CHALLIS. 1983. "The realities and potential of community care." In U.K. Department of Health and Social Services, *Elderly People in the Community*, pp. 93-117.

JONES, H. B. 1956. "A special consideration of the ageing process, disease and life expectancy." *Advances in Biological and Medical Physics* 4:281-337.

JONSSON, B, and B. LINDGREN. 1980. "Five common fallacies in estimating the economic gains of early discharge." *Social Science and Medicine* 14C:27-33.

JONSSON, E., and P. M. JONSSON. 1982. "Economic evaluation of CT scanning of the head: A review." In Culyer and Horisberger (eds.), *Economic and Medical Evaluation*, pp. 288-95.

JUDGE, K. 1982. "The growth and decline of social expenditure." In Walker (ed.), *Public Expenditure and Social Policy*, pp. 27-48.

KAHN, K. L.; C. P. ROTH; A. FINK; et al. 1985. *A Review of the Literature on Gastrointestinal Endoscopy for Diagnosis: Findings, Complications, Costs, Efficacy, Utilization Rates, and Indications*. Santa Monica, Calif.: Rand Corporation.

KANE, R. L., and R. A. KANE. 1985*a*. *A Will and a Way: What the United States Can Learn from Canada About Caring for the Elderly.* New York: Columbia University Press.

KANE, R. L., and R. A. KANE. 1985*b*. "The feasibility of universal long-term care benefits: Ideas from Canada." *New England Journal of Medicine* 312:1357-64.

KANE, R. L.; J. WALES; L. BERNSTEIN; et al. 1984. "A randomized controlled trial of hospice care." *Lancet* 1:890-94.

KASPER, J. A.; D. C. WALDEN; and G. R. WILENSKY. 1980. "Who are the uninsured?" NMCES Data Preview Series, Number 1. National Center for Health Services Research and Health Care Technology Assessment. Rockville, Maryland.

KEELER, E. B.; R. H. BROOK; G. A. GOLDBERG; et al. 1985. "How free care reduced hypertension in the health insurance experiment." *Journal of the American Medical Association* 254:1926-31.

KERMACK, W. O., et al. 1934. "Death-rates in Great Britain and Sweden: Some general regularities and their significance." *Lancet*, pp. 698-703.

KING, D.; D. REESE; and S. ZACHARY. 1985. "Medicaid coverage and payment policies for organ transplants." George Washington University, Intergovernmental Health Policy Project. Washington, D.C.

KLEIN, R. 1983. *The Politics of the National Health Service.* London and New York: Longman.

______. 1984 "Rationing health care." *British Medical Journal* 289:143-44.

KNOWLES, J. (ed.). 1977. *Doing Better and Feeling Worse.* New York: W. W. Norton.

KNOX, G. (ed.). 1985. *Investigative Methods in Public Health.* Volume 3 of W. Holland (ed.), *Oxford Textbook of Public Health.* Toronto: Oxford University Press.

KOIZUMI, A. 1982. "Toward a healthy life in the 21st century." In *Population Aging in Japan.*

KURODA, T. 1982. "Aging of the population in Japan: Prospects and challenges." In *Population Aging in Japan.*

______. 1984. "Comment." IUSSP-NIRA Seminar on Biological and Social Correlates of Mortality, Tokyo, Japan.

LAGERGREN, N.; L. LUNDEN; M. ORKAN; and C. SANNE. 1984. *Time to Care: A Report Prepared for the Swedish Secretariat for Future Studies.* Oxford: Pergamon.

LAKATTA, E. G. 1983. "Health, disease and cardiovascular aging." Paper prepared for the Committee on Aging, Society, Health, and Disease, National Academy of Sciences, Institute of Medicine, Washington, D.C. (July 18-20).

LAND, H. 1978. "Who cares for the family?" *Journal of Social Policy* 7:357-84.

LASLETT, P. 1971. *The World We Have Lost.* Second edition. Cambridge, U.K.: Cambridge University Press.

LAWRENCE, T. L. 1985. "Health care facilities for the elderly in Japan." *International Journal of Health Services* 15:677-97.

LEFEBVRE, L. A.; Z. ZSIGMOND; and M. S. DEVEREAUX. 1979. *A Prognosis for Hospitals: The Effects of Population Change on the Need for Hospital Space, 1967-2031.* Ottawa: Statistics Canada.

LÉGARÉ, J. 1966. "Quelques considérations sur les tables de mortalité de générations." *Population* 21:915-31.

LEUTZ, W. N.; J. N. GREENBERG; R. ABRAHAMS; et al. 1985. *Changing Health Care for an Aging Society: Planning for the Social/Health Maintenance Organization.* Lexington, Mass.: Lexington Books, D. C. Heath & Co.

LEVASSEUR, M. 1983. *Des problèmes prioritaires.* Conseil des affaires sociales et de la famille. Québec: Éditeur officiel du Québec.

LEWIS, M. 1985. "Older women and health: An overview." *Women and Health* 10:1-16.

LOMAS, J. 1986. "Health care delivery models: Emerging trends in the delivery of health services." *Clinical Biochemistry* (forthcoming).

LOMAS, J., and G. L. STODDART. 1982. "Estimates of the potential impact of nurse practitioners on future requirements for general practitioners." Research report No. 48. McMaster University, Faculty of Social Sciences, Program for Quantitative Studies in Economics and Population. Hamilton, Ont.

LUBECK, D. P., and J. P. BUNKER. 1982. "The artificial heart: Costs, risks, and benefits." Case Study No. 9. In U.S. Office of Technology Assessment, *The Implications of Cost-Effectiveness Analysis.*

LUBITZ, J., and R. PRIHODA. 1984. "The use and costs of Medicare services in the last two years of life." *Health Care Financial Review* 5:117-31.

LURIE, N.; N. B. WARD; M.F. SHAPIRO; and R.H. BROOK. 1984. "Termination from Medi-Cal: Does it affect health?" *New England Journal of Medicine* 311:480-84.

MacDONALD, R.; H. QURESHI; and A. WALKER. 1984. "Sheffield shows the way." *Community Care* (October 18):28-30.

MacLEAN, U. 1985. "Women and health in Europe: The scope and limits of epidemiology." *International Journal of Health Services* 15:665-76.

MADDOX, G. L., and K. G. MANTON. 1986. "The limits of rationality in reshaping geriatric care." In Eisdorfor (ed.), *Reshaping Health Care for the Elderly*.

MANITOBA. Department of Health and Social Development. 1973. *Aging in Manitoba*. Winnipeg: Government of Manitoba.

MANITOBA HEALTH SERVICES COMMISSION. 1982. *Annual Statistics, 1980-81*. Winnipeg: MHSC.

______. 1985. *Annual Statistics, 1983-84*. Winnipeg: MHSC.

MANNING, W. G.; A. LEIBOWITZ; G. A. GOLDBERG; et al. 1984. "A controlled trial of the effect of a prepaid group practice on use of services." *New England Journal of Medicine* 310:1505-10.

MANTON, K. G. 1982. "Changing concepts of morbidity and mortality in the elderly population." *Milbank Memorial Fund Quarterly* 60:183-244.

______. 1984. "Mortality patterns in developed countries." In Tommasen (ed.), *Comparative Social Research*, pp. 259-86.

______. 1986*a*. "Cause specific mortality patterns among the oldest old: Multiple cause of death trends, 1968-1980." *Journal of Gerontology* 41:282-289.

______. 1986*b*. "Past and future life expectancy increases at later ages: Their implications for the linkage of chronic morbidity, disability, and mortality." *Journal of Gerontology* (in review).

______. 1986*c*. "The linkage of health status changes and workability." Paper prepared for the Workshop on Prevention as a Way to Improve Work Capacity in Older People, The Brookings Institution, Washington, D.C. (May 8-9).

MANTON, K. G., and K. LIU. 1986. "Multivariate determinants of out-of-pocket payments for home based care."

MANTON, K. G., and J. W. VERTREES. 1984. "Use of grade of membership analysis to evaluate and modify DRGs." *Medical Care* 22:1067-82.

MANTON, K. G., and A. I. YASHIN. 1986. "Control issues in stochastic models of subnational health service delivery systems." In *Application of Operations Research Technology*.

MAYNARD, A. 1982. "The regulation of public and private health care markets." In *Public/Private Mix for Health*, pp. 473-511.

McKEOWN, T. 1976. "The role of medicine: Dream, mirage or nemesis?" Nuffield Provincial Hospitals Trust. London.

______. 1982. "Les déterminants de l'état de santé des populations depuis trois siècles: Le comportement, l'environnement et la médecine." *Médecine et société: Les années 80*. Montréal: Éditions coopératives Albert Saint-Martin, pp. 143-75.

McNEIL, B. J.; R. WEICHSELBAUM; and S. G. PAUKER. 1981. "Speech and survival: Tradeoffs between quality and quantity of life in laryngeal cancer." *New England Journal of Medicine* 305:982-87.

MECHANIC, D. 1985. "Cost containment and the quality of medical care: Rationing strategies in an era of constrained resources." *Milbank Memorial Fund Quarterly* 63:453-75.

MERRIKEN, K., and T. D. OVERCAST. 1985. "Patient selection for heart transplantation: When is a discriminating choice discrimination?" *Journal of Health Politics, Policy and Law* 10:7-32.

MERRISON, A. 1979. Royal Commission on the National Health Service. *Report*. London: Her Majesty's Stationery Office.

MILLER, D. B. 1985. "Women and long-term nursing care." *Women and Health* 10:29-38.

MINAKER, K. L., and J. W. ROWE. 1985. "Health and disease among the oldest old: A clinical perspective." *Milbank Memorial Fund Quarterly* 63:350-76.

MINTZBERG, H. 1983. *Structures in Fives: Designing Effective Organizations*. Englewood Cliffs, N.J.: Prentice-Hall.

MOLONEY, T. W., and D. E. ROGERS. 1979. "Medical technology: A different view of the contentious debate over costs." *New England Journal of Medicine* 301:1413-19.

MORONEY, R. M. 1978. *The Family and the State*. London: Longman.

MOSSEY, J. M.; B. HAVENS; N. P. ROOS; and E. SHAPIRO. 1981. "The Manitoba longitudinal study on aging: Description and methods." *Gerontologist* 21:551-58.

MOSSEY, J. M., and E. SHAPIRO. 1985. "Physician use by the elderly over an eight-year period." *American Journal of Public Health* 75:1333-34.

MULLEN, P. D., and J. G. ZAPKA. 1981. "Health education and promotion in HMOs: The recent evidence." *Health Education Quarterly* 8:292-315.

MUNDINGER, M. O.. 1985. "Health service funding cuts and the declining health of the poor." *New England Journal of Medicine* 313:44-47.

MYERS, G. C., and K. G. MANTON. 1984*a*. "Compression of mortality: Myth or reality?" *Journal of Gerontology* 24:346-53.

MYERS, G. C., and K. G. MANTON. 1984*b*. "Recent changes in the U.S. age at death distribution: Further observations." *Journal of Gerontology* 24:572-75.

NATIONAL ADVISORY COUNCIL ON AGING. 1983. *Moving Ahead with Aging in Canada*. Ottawa: Supply and Services Canada.

NATIONAL CENTER FOR HEALTH SERVICES RESEARCH. 1985. *U.S. Decennial Life Tables for 1979-81*. Vol. I, Hawaii State Life Tables. Department of Health and Human Services Pub. No.(PHS) 85-1150. Hyattsville, Maryland.

NATIONAL CENTER FOR HEALTH STATISTICS. 1984. *Health, United States*. Department of Health and Human Services Pub. No. (PHS) 85-1232. Washington, D.C.: U.S. Government Printing Office.

NATIONAL COUNCIL OF WELFARE. 1985. *Poverty Profile, 1985*. Ottawa: Supply and Services Canada.

NEWHOUSE, J. P.; W. G. MANNING; C. N. MORRIS; et al. 1981. "Some interim results from a controlled trial of cost sharing in health insurance." *New England Journal of Medicine* 305:1501-07.

NISSEL, M., and L. BONNERJEA. 1982. *Family Care of the Handicapped Elderly: Who Pays?* London: Policy Studies Institute.

OMRAN, A. R. 1971. "The epidemiologic transition: A theory of the epidemiology of population change." *Milbank Memorial Fund Quarterly* 49:509-38.

OPIT, L. J. 1977. "Domicilary care for the elderly sick: Economy or neglect?" *British Medical Journal* 1:30-33.

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT. 1985. *Measuring Health Care, 1960-1983*. Social Policy Studies No. 2. Paris: OECD.

OVERCAST, T. D.; K. J. MERRIKEN; and R. W. EVANS. 1985. "Malpractice issues in heart transplantation." *Amercian Journal of Law and Medicine* 10:363-95.

OWEN, J. W. 1985. "A hospital incentive payment system." *World Hospitals* 21(4):38-40.

PARKER, R. 1981. "Tending and social policy." In Goldberg and Hatch (eds.), *A New Look at the Personal Social Services*.

PATTISON, R. V., and H. M. KATZ. 1983. "Investor-owned and not-for-profit hospitals: A comparison based on California data." *New England Journal of Medicine* 309:345-53.

PELHAM, A. O., and W. F. CLARK (eds.). 1986. *Managing Home Care for the Elderly*. New York: Springer.

PELL, S., and M.P.H. FAYERWEATHER. 1985. "Trends in the incidence of myocardial infarction and in associated mortality and morbidity in a large employed population, 1957-1983." *New England Journal of Medicine* 312:1005-1011.

PÉRON, Y., and C. STROHMENGER. 1985. *Demographic and Health Indicators: Presentation and Interpretation*. Ottawa: Statistics Canada.

Population Aging in Japan: Problems and Policy Issues in 21st Century. 1982. Proceedings of an International Symposium on "An aging society: Strategies for 21st century Japan." (November 24-27). Tokyo: Nihon University.

POWER, M., and S. KELLY. 1981. "Evaluating domiciliary volunteer care of the very old." In Goldberg and Connelly (eds.), *Evaluative Research in Social Care*, pp. 214-34.

Proceedings of the Conference on the Decline in Coronary Heart Disease Mortality. 1979. Washington (D.C.): U.S. Department of Health, Education and Welfare.

Public/Private Mix for Health: The Relevance and Effects of Change. 1982. London: Nuffield Provincial Hospitals Trust.

QURESHI, H., and A. WALKER. 1986. *The Caring Relationship: The Family Care of Elderly People.* London: Macmillan.

RATHBONE-McCUAN, E. 1985. "Health needs and social policy." *Women and Health* 10:17-27.

RECHNITZER, P. A., et al. 1983. "The relationship of exercise to the recurrence rate of myocardial infarction in men." *American Journal of Cardiology* 51:65-69.

REGGIA, J. A., and S. TUHRIM (eds.). 1985. *Computer-Assisted Medical Decision Making.* New York: Springer.

RELMAN, A. S. 1982. "An institute for health-care evaluation." *New England Journal of Medicine* 306:669-70.

RICE, D. P., and C. L. ESTES. 1984. "Health of the elderly: Policy issues and challenges." *Health Affairs* 3(4):25-49.

RICE, D. P., and J. J. FELDMAN. 1983. "Living longer in the United States: Demographic changes and health needs of the elderly." *Milbank Memorial Fund Quarterly* 61:362-96.

RIES, P. W. 1983. "Americans assess their health: United States, 1978." *Vital and Health Statistics.* Series 10, No. 142. Department of Health and Human Services Pub. No. (PHS) 83-1570. Washington, D. C.: U.S. Government Printing Office.

RILEY, G.; J. LUBITZ; R. PRIHODA; and M. A STEVENSON. 1985. "Changes in the distribution of Medicare expenditures among aged enrollees, 1969 to 1982." Working Paper Series No. 85-12. Department of Health and Human Services. Washington, D.C.

ROBERTSON, D.; L. CHRIST; and L. STALDER. 1982. "Geriatric assessment unit in a teaching hospital." *Canadian Medical Association Journal* 16:1060-64.

ROBERTSON, D., and K. ROCKWOOD. 1982. "Outcome of hospital admission of the very elderly." *Journal of the American Geriatrics Society* 30:101-104.

ROBINE, J. M., and Y. BRUNELLE. 1986. *L'évolution de l'incidence de l'invalidité dans la population adulte de 25 à 64 ans au Québec, entre 1972 et 1982.* Conseil des affaires sociales et de la famille (forthcoming).

ROBINE, J. M.; F. HATTON; and J. LION. 1985. "Rapport au haut Comité d'étude et d'information sur l'alcoolisme, mortalité, morbidité." Institut National de la Santé et de la Recherche Médicale. Paris.

ROBINSON, P. K., et al. (ed.). 1984. *Aging and Technological Advances.* New York: Plenum.

ROCH, D. J.; R. G. EVANS; and D. W. PASCOE. 1985. *Manitoba and Medicare, 1971 to the Present.* Winnipeg: Manitoba Health Department.

ROEMER, M. 1961. "Bed supply and hospital utilization." *Hospitals*, p. 36.

ROOS, L. L.; J. P. NICOL; C. JOHNSON; and N. P. ROOS. 1979. "Using administrative data banks for research and evaluation: A case study." *Evaluation Quarterly* 3:236-55.

ROOS, L. L., and N. P. ROOS. 1983. "Assessing existing technologies: The Manitoba study of common surgical procedures." *Medical Care* 21:454-62.

ROOS, N. P. 1984. "Hysterectomy: Variations in rates across small areas and across physicians' practices." *American Journal of Public Health* 74:327-35.

ROOS, N. P.; G. FLOWERDEW; A. WAJDA; and R. B TATE. 1986. "Variations in physicians' hospitalization practices: A population-based study in Manitoba, Canada." *American Journal of Public Health* 76:45-51.

ROOS, N. P.; P. D. HENTELEFF; and L. L. ROOS. 1977. "A new audit procedure applied to an old question: Is the frequency of T&A justified?" *Medical Care* 15:1-18.

ROOS, N. P., and L. L. ROOS Jr. 1981. "High and low surgical rates: Risk factors for area residents." *American Journal of Public Health* 71:591-600.

ROOS, N. P., and L. L. ROOS Jr. 1982. "Surgical rate variations: Do they reflect the health or socio-economic characteristics of the population?" *Medical Care* 20:945-58.

ROOS, N. P., and E. SHAPIRO. 1981. "The Manitoba longitudinal study on aging: Preliminary findings on health care utilization by the elderly." *Medical Care* 19:644-57.

ROSE, G. 1985. "Sick individuals and sick populations." *International Journal of Epidemiology* 14:32-38.

ROSE, G., et al. 1982. "A randomized controlled trial of anti-smoking advice." *Journal of Epidemiology and Community Health* 36:102-108.

ROSENTHAL, C. J. 1985. "Response to Vern Bengtson's address." Paper prepared for the Canadian Association on Gerontology meeting, Hamilton, Ont. (October 19).

ROWE, D. S., and G. E. BISBEE. 1978. "Preventive health care in the HMO: Cost benefit issues." *Journal* *of the American College Health Association* 26:298-301.

ROY, L. 1983. *Des victoires sur la mort.* Conseil des affaires sociales et de la famille. Québec: Éditeur officiel du Québec.

ROYAL COLLEGE OF PHYSICIANS COMMITTEE ON GERIATRICS. 1981. "Organic mental impairment in the elderly: Implications for research, education and provision of services." *Journal of the Royal College of Physicians* 15(3):8.

ROYBAL, E. A. 1984. *World Health Systems: Lessons for the United States.* Committee Publication No. 98-430. U.S. House of Representatives. Select Committee on Aging. Washington, D.C.: U.S. Government Printing Office.

RUBENSTEIN, L. Z.; K. R. JOSEPHSON; D. WEILAND; et al. 1984. "Effectiveness of a geriatric evaluation unit: A randomized clinical trial." *New England Journal of Medicine* 311:1664-70.

RUFFIÉ, J. 1976. *De la biologie à la culture.* Paris: Flammarion.

RYTEN, E. 1985. "A review of trends in the number of places available for the study of medicine in Canada." Association of Canadian Medical Colleges. Ottawa.

SANDERS, B. S. 1964. "Measuring community health levels." *American Journal of Epidemiology* 54:1063-71.

SAUDIER, S. 1983. "Comparison of health expenditures in France and in the United States, 1950-1978." *Vital and Health Statistics.* Series 3, No. 21. Washington, D.C.: U.S. Government Printing Office.

SCHWARTZ, W. B., and H. J. AARON. 1984. "Rationing hospital care: Lessons from Britain." *New England Journal of Medicine* 310:52-56.

SCHWARTZ, W. B., and H. J. AARON. 1985. "Health care costs: The social tradeoffs." *Issues in Science and Technology* 1(2):39-46.

SCHWENGER, C. W. 1985. "Health care for elderly Canadians: Summary of conclusions and recommendations."

SCHWENGER, C. W., and M. J. GROSS. 1981. *Health Care Costs for the Elderly in Ontario, 1976-2026.* Toronto: Ontario Economic Council.

SCITOVSKY, A. A. 1984. "The high cost of dying: What do the data show?" *Milbank Memorial Fund Quarterly* 62:591-608.

______. 1985. "Medical costs in the last year of life." *Generations* (Summer):17-29.

SCITOVSKY, A. A., and N. McCALL. 1975. *Changes in the Costs of Treatment of Selected Illnesses, 1951, 1961, 1971.* Rockville, Maryland: National Center for Health Services Research.

SEYD, R.; K. SIMMONS; A. TENNANT; and M. BAYLEY. 1984. "Community care in Dinnington: Informal support prior to the project." Paper No. 3. University of Sheffield, Neighbourhood Services Project. Sheffield, U.K.

SHAH, C. P. 1980. "Day-care surgery in Canada: Evolution, policy and experience of provinces." *Canadian Anaesthetists' Society Journal* 27:399-405.

SHANAS, E. 1979. "The family as a support system in old age." *Gerontologist* 19:169-83.

SHANAS, E.; P. TOWNSEND; D. WEDDERBURN; et al. 1968. *Old People in Three Industrial Societies.* London: Routledge & Kegan Paul.

SHANAS, E (ed.). 1965. *Social Structure and the Family.* Englewood Cliffs, N.J.: Prentice-Hall.

SHAPIRO, E. 1983. "Impending death and the use of hospitals by the elderly." *Journal of the American Geriatrics Society* 31:348-51.

______. 1985. "Caring about carers: What have we learned from research and experience?" Paper prepared for the Alberta Association on Gerontology meeting (May).

SHEPARD, D. F. 1983. "Estimating the effect of hospital closure on area-wide inpatient hospital costs: A preliminary model and application." *Health Services Research* 18:513-49.

SHEPARD, D. F., and D. N. SOULE. 1981. "Estimating hospital cost by diagnosis for population based analysis." *Journal of Community Health* 7:2-20.

SIEGEL, J. S. 1980. "Recent and prospective demographic trends for the elderly population and some implications for health care." In Haynes and Feinleib (eds.), *Epidemiology of Aging.*

SKELLIE, F. A.; G. M. MOBLEY; and R. E. COAN. 1982. "Cost-effectiveness of community based long-term care: Current findings from Georgia's alternative health services project." *American Journal of Public Health* 72:353-57.

SLOAN, F. A., and R. A. VRACIV. 1983. "Investor-owned and not-for-profit hospital: Addressing some issues." *Health Affairs* 2(1):25-37.

SMART, R. G., and F. B. GLASER (eds.). 1984. *Research Advances in Alcohol and Drug Problems.* New York: Plenum.

SOLDO, B. J., and K. G. MANTON. 1985. "Health status and service needs of the oldest old: Current patterns and future trends." *Milbank Memorial Fund Quarterly* 63:286-319.

SOMERS, A. R. 1982. "Long-term care for the elderly and disabled: A new health priority." *New England Journal of Medicine* 307:221-26.

______. 1985. "Financing long-term care for the elderly: Institutions, incentives, issues."In Institute of Medicine, *Health in an Older Society*, pp. 182-233.

SORLIE, P. et al. 1980. "Body build and mortality." *Journal of the American Medical Association* 243:1828-31.

SPITZER, W. O. 1984. "The nurse practitioner revisited: Slow death of a good idea." *New England Journal of Medicine* 310:1049-51.

STATISTICS CANADA. 1978. *Social Security, 1978.* Ottawa: Supply and Services Canada.

______. 1984. *Hospital Morbidity, 1979-81.* Ottawa: Supply and Services Canada.

______. 1985. *Population Projections for Canada, Provinces and Territories, 1984-2006.* Ottawa: Supply and Services Canada.

STODDART, G. L. 1985. "Rationalizing the health care system." In Courchene, Conklin, and Cook (eds.), *Ottawa and the Provinces*, Vol. 2. Toronto: Ontario Economic Council.

STODDART, G. L., and R. J. LABELLE. 1985. "Privatization in the Canadian health care system: Assertions, evidence, ideology and options." Health and Welfare Canada. Ottawa.

STODDART, G. L., and J. LOMAS. 1982. "Physician manpower under competing health plans: Where we could be, where we are, and issues in getting from here to there." Research Paper No. 3. Council of Ontario Universities, Task Force on Medical Manpower. Toronto.

STODDART, G. L., and J. R. SELDON. 1984. "Publicly financed competition in Canadian health care delivery: A proposed alternative to increased regulation." In Boan (ed.), *Proceedings of the Second Canadian Conference on Health Economics.*

STOLEE, P.; K. ROCKWOOD; and D. ROBERTSON. 1982. *Saskatchewan Health Status Survey of the Elderly.* "Report II: The elderly in the community." Division of Geriatric Medicine. Regina: University of Saskatchewan.

STOLLER, E. P., and L. L. EARL. 1983. "Helping with activities of everyday life: Sources of support for the noninstitutionalised elderly." *Gerontologist* 23:64-70.

STONE, L. O., and S. FLETCHER. 1980. *A Profile of Canada's Older Population.* Montréal: Institute for Research on Public Policy.

SULLIVAN, D. F. 1971. "A single index of mortality and morbidity." *HSMHA Health Reports* 86:347-54.

TARLOV, A. R. 1983. "The increasing supply of physicians, the changing structure of the health-services system and the future practice of medicine." *New England Journal of Medicine* 308:1235-44.

TEASDALE, T. A.; L. SHUMAN; E. SNOW; et al. 1983. "A comparison of placement outcomes of geriatric cohorts receiving care in a geriatric assessment unit and on general medical floors." *Journal of the American Geriatrics Society* 31:529-31.

THOMAS, L. 1974. *The Lives of a Cell: Notes of a Biology Watcher.* New York: Viking; and Toronto: Bantam.

TINKER, A. 1983. *The Elderly in Modern Society.* Second edition. London: Longman.

______. 1984. *Staying at Home.* London: Her Majesty's Stationery Office.

TITMUSS, R. M. 1981. *Essays on 'The Welfare State.'* London: Allen & Unwin.

TOLLEY, H. D.; K. G. MANTON; and J. W. VERTREES. 1986. "An evaluation of three payment strategies for capitation for Medicare."

TOMMASEN, R. F. (ed.). 1984. *Comparative Social Research.* Greenwich, Conn.: Jai Press.

TORREY, B. B. 1984. "The visible costs of the invisible aged: The fiscal implications of the growth in the very old." Paper prepared for the American Association for the Advancement of Science meetings, New York (May).

TOWNSEND, P. 1962. *The Last Refuge*. London: Routledge & Kegan Paul.

______. 1965. "The effects of family structure on the likelihood of admission to an institution in old age: The application of a general theory." In Shanas (ed.), *Social Structure and the Family*, pp. 163-87.

______. 1979. *Poverty in the United Kingdom*. Harmondsworth, U.K.: Penguin Books.

______. 1981*a*. "The structured dependency of the elderly: Creation of social policy in the twentieth century." *Aging and Society* 1:5-28.

______. 1981*b*. "Elderly people with disabilities." In Walker with Townsend (eds.), *Disability in Britain*, pp. 91-118.

TOWNSEND, P., and N. DAVIDSON. 1982. *Inequalities in Health*. Harmondsworth, U.K.: Penguin Books.

TUCKER, M. A.; G. DAVISON; and S. J. OGLE. 1984. "Day hospital rehabilitation: Effectiveness and cost in the elderly." *British Medical Journal* 289:1209-12.

UNITED HOSPITAL FUND OF NEW YORK. 1985. *Hospitals and the uninsured poor: Measuring and paying for uncompensated care*. New York: UHF.

U.K. AUDIT INSPECTORATE. 1983. *Social Services: Provision of Care for the Elderly*. London: Her Majesty's Stationery Office.

U.K. DEPARTMENT OF HEALTH AND SOCIAL SERVICES. 1981. *Growing Older*. Cmnd 8173. London: Her Majesty's Stationery Office.

______. 1983. *Elderly People in the Community*. London: Her Majesty's Stationery Office.

______. Health Advisory Service. 1983. *The Rising Tide*. London: Her Majesty's Stationery Office.

U.K. OFFICE OF POPULATION CENSUSES AND SURVEYS. 1981. *General Household Survey, 1980*. London: Her Majesty's Stationery Office.

UNITED NATIONS. 1985. *World Population Prospects: Estimates and Projections as Assessed in 1982*. Population Studies No. 86. New York: U.N.

U.S. BUREAU OF THE CENSUS. 1984. "Current population reports." *Projections of the Population of the United States, By Age, Sex, and Race, 1983 to 2080*. Series P-25, No. 952. Washington, D.C.: U.S. Government Printing Office.

U.S. CHAMBER OF COMMERCE. 1985. *Employee Benefits, 1984*. Washington, D.C.

______. 1986. "Employee benefits stay steady as payroll percent in 1984, but composition changes." *Medical Benefits* 3(4):1-3.

U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE. 1979. *Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention*. Washington, D.C.: U.S. Goverment Printing Office.

______. Public Health Service. 1980. "Promoting Health/Preventing Disease: Objectives for the Nation." Hyattsville, Maryland.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES. 1981. *Long-Term Care: Background and Future Directions*. HCFA Pub. No. 81-20047. Washington, D.C.: U.S. Government Printing Office.

______. 1984. *Public Health Service Implementation Plans for Attaining the Objectives for the Nation*. Washington, D.C.: U.S. Government Printing Office.

______. 1985*a*. *Prevention, 1984-85*. Pub. No. 474-512. Washington, D.C.: U.S. Government Printing Office.

______. Task Force on Organ Transplantation. 1985*b*. "Report to the Secretary and the Congress on Immunosuppressive Therapies." Office of Organ Transplantation. Rockville, Maryland.

U.S. HOSPITAL RESEARCH AND EDUCATIONAL TRUST. 1984. *Long-Term Care Systems for the Elderly*. Chicago: HRET.

U.S. OFFICE OF TECHNOLOGY ASSESSMENT. 1978. *Assessing the Efficacy and Safety of Medical Technologies*. Washington, D.C.: U.S. Government Printing Office.

______. 1980. *The Implications of Cost-Effectiveness Analysis of Medical Technology*. Washington, D.C.: U.S. Government Printing Office.

______. 1981*a*. *Cost Effectiveness of Influenza Vaccination*. Washington, D.C.: U.S. Government Printing Office.

______. 1981*b*. *Policy Implications of the Computed Tomography (CT) Scanner: An Update*. Washington, D.C.: U.S. Government Printing Office.

______. 1984*a*. *Medical Technology and the Costs of the Medicare Program*. Report No. OTA-H-227. Washington, D.C.: U.S. Government Printing Office.

______. 1984*b*. *Update of Federal Activities Regarding the Use of Pneumococcal Vaccine*. Washington, D.C.: U.S. Government Printing Office.

U.S. SENATE. Special Committee on Aging. 1984. *Long-Term Care in Western Europe and Canada: Implications for the United States*. Washington, D.C.: U.S. Government Printing Office.

VAYDA, E. 1973. "A comparison of surgical rates in Canada and in England and Wales." *New England Journal of Medicine* 289:1224-29.

VAYDA, E.; J. M. BARNSLEY; W. R. MINDELL; and B. CARDILLO. 1984. "Surgical rates in small areas: A five-year study of Ontario's counties from 1973-1977." *Canadian Medical Association Journal* 131:111-15.

VERTREES, J. W., and K. G. MANTON. 1986. "An assessment of the complexity of chronic disease manifestation at later ages." *Inquiry* (in press).

WALKER, A. 1980*a*. "The social creation of poverty and dependency in old age." *Journal of Social Policy* 9:45-75.

______. 1980*b*. "The social origins of impairment, disability and handicap." *Medicine and Society* 6(2/3):18-26.

______. 1981*a*. "Towards a political economy of old age." *Aging and Society* 1:73-94.

______. 1981*b*. "Community care and the elderly in Great Britain: Theory and practice." *International Journal of Health Services* 11:541-57.

______. 1982*a*. *Community Care: The State, the Family and Social Policy*. Oxford: Blackwell.

______. 1982*b*. "Dependency and old age." *Social Policy and Administration* 16:115-35.

______. 1983. "Social policy and elderly people in Great Britain: The construction of dependent social and economic status in old age." In Guillemard (ed.), *Old Age and the Welfare State*, pp. 143-68.

______. 1985. *The Care Gap: How Can Local Authorities Meet the Needs of the Elderly?*. London: Local Government Information Unit.

WALKER, A. (ed.). 1982. *Public Expenditure and Social Policy*. London: Heinemann.

WALKER, A., with P. TOWNSEND (eds.). 1981. *Disability in Britain*. Oxford: Blackwell.

WARNER, K. E., and B. R. LUCE. 1982. *Cost-Benefit and Cost-Effectiveness Analysis in Health Care*. Ann Arbor, Mich.: Health Administration Press.

WARNER, K. E., and H. A. MURT. 1984. "Economic incentives for health." *Annual Review of Public Health* 5:107-33.

WATT, J. M.; R. A. DERZON; S. C. RENN; et al. 1985. "The comparative economic performance of investor-owned chain and not-for-profit hospitals." *New England Journal of Medicine* 312:579-82.

WEISSERT, W. G. 1978. "Cost of adult day care: A comparison to nursing come costs." *Inquiry* 15:10-19.

______. 1985. "Seven reasons why it is so difficult to make community-based long-term care cost-effective." *Health Services Research* 20:423-33.

WELLINGTON-DUFFERIN DISTRICT HEALTH COUNCIL. 1984. "Health needs and resources study." Guelph, Ont.

WENGER, C. 1984. *The Supportive Network*. London: Allen & Unwin.

WENNBERG, J. E. 1984. "Dealing with medical practice variations: A proposal for action." *Health Affairs* 3(2):6-32.

______. 1985. "On patient need, equity, supplier induced demand and the need to assess the outcome of common medical practices." *Medical Care* 23:512-20.

WENNBERG, J. E.; B. A. BARNES; and M. ZUBKOFF. 1982. "Professional uncertainty and the problem of supplier induced demand." *Social Science and Medicine* 16:811-24.

WHITTAKER, J. K., and J. GARBARINO (eds.). 1983. *Social Support Networks: Informal Helping in the Human Services*. New York: Aldine.

WICKS, M. 1982. "Community care and elderly people." In Walker (ed.), *Community Care*, pp. 97-117.

WILDAVSKY, A. 1977. "Doing better and feeling worse: The political pathology of health policy." In Knowles (ed.), *Doing Better and Feeling Worse*, pp. 105-23.

______. 1979. *Speaking Truth to Power: The Art and Craft of Policy Analysis*. Boston: Little Brown.

WILDER, C. S. 1983. "Disability Days: United States, 1980." *Vital and Health Statistics*. Series 10, No. 143. Department of Health and Human Services Pub. No. (PHS) 83-1571. Washington, D.C.: U.S. Government Printing Office.

WILENSKY, G. R., and M. L. BERK. 1985. "The poor, sick, uninsured, and the role of Medicaid." In United Hospital Fund, *Hospitals and the Uninsured Poor*.

WILKINS, R. 1980. *Health Status in Canada, 1926-1976*. Document No. 13 (May). Montréal: The Institute for Research on Public Policy.

WILKINS, R., and O. B. ADAMS. 1983*a*. *Healthfulness of Life*. Montréal: The Institute for Research on Public Policy.

WILKINS, R., and O. B. ADAMS. 1983*b*. "Health expectancy in Canada, late 1970s: Demographic, regional and social dimensions." *American Journal of Public Health* 73:1073-1080.

WILLEMS, J. S.; C. R. SANDERS; M. A. RIDDIOUGH; and J. C. BELL. 1980. "Cost-effectiveness of vaccination against pneumococcal pneumonia." *New England Journal of Medicine* 303:553-59.

WILLIAMS, A. 1985. "Economics and the rational use of medical technology." Paper prepared for the Conference on the Economics of Medical Technology, Valkenburg, The Netherlands (September 2-4).

WILSON, E. 1982. "Women, the 'community' and the 'family'." In Walker (ed.), *Community Care*, pp. 40-55;

WODINSKY, H.; P. GEUKERS; V. ESKEDJIAN; and R. DEBER. 1985. "CT scanner policy in Ontario." University of Toronto, Department of Health Administration. Toronto.

WOOD, P.H.N. 1980. "Appreciating the consequences of disease: the International Classification of Impairments, Disabilities and Handicaps." *WHO Chronicle* 34:376-80.

WOODBURY, M. A., and K. G. MANTON. 1982. "A new procedure for analysis of medical classification." *Methods of Information in Medicine* 21:210-20.

WOODS GORDON MANAGEMENT CONSULTANTS. 1984. *Investigation of the Impact of Demographic Change on the Health Care System in Canada*. Final Report to the Task Force on the Allocation of Health Care Resources. Toronto: Woods Gordon.

WORLD HEALTH ORGANIZATION. 1974. "Expert committee report on planning and organization of geriatric services." Geneva.

_____. 1980. *International Classification of Impairments, Disabilities and Handicaps*. Geneva: WHO.

_____. 1984*a*. *World Health Statistics Annual*. Geneva: WHO.

_____. 1984*b*. *The Use of Epidemiology in the Study of the Elderly*. TRS 706. Geneva: WHO.

_____. 1984*c*. "Buts régionaux proposés dans le cadre de la stratégie régionale de la santé pour tous." EUR/RC34/7, Rev. 1, 6827L/6820L (December 21). Geneva.

WRIGHT, K. 1982. "The economics of community care." In Walker (ed.), *Community Care*, pp. 161-78.

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